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Mud Mountain Dam Upstream Fish Passage Investigation

Volume 3

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Dam Safety Assurance Program, Mud Mountain Dam, White River,
Washington



March 2005

VOLUME 3

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APPENDIX A – COST ESTIMATING

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A.1 -- Executive Summary

A.1.1 BACKGROUND

The Seattle District Corps of Engineers has been charged by Congress to investigate and design a long-term solution for fish passage around Mud Mountain Dam (MMD). The objective of this study is to identify the least-cost, environmentally acceptable solutions to provide long-term fish passage at MMD. This cost appendix describes the cost estimating performed for this study. Costs are developed for two plans: a Federally and a Locally Preferred Plan. In general the Federally Preferred Plan has fewer hydraulic features (gates and weirs) and assumes the PSE diversion is discontinued, whereas the Locally Preferred Plan is designed to optimize the performance of the facility for fully operating the diversion. Both designs have been developed to a 35% level.

A.1.2 REPORT LAYOUT

This appendix is divided into four sections: The first section presents the general basis for the estimate. The second and third sections describe the construction, operation and maintenance costs, real estate costs, planning, and design costs for the Federally and Locally Preferred Plans respectively. The last section compares the two Plans.

A.1.3 PLAN COST SUMMARIES

Tables A1-1 and A1-2 present cost summaries for the FPA and the LPA respectively.

Table A1-1 Federally Preferred Plan - Contract Cost Summary

THIS ESTIMATE IS BASED ON THE SCOPE OF WORK FOR THE SECTION 205 REPORT

PROJECT: MMD FISH PASSAGE

DISTRICT: SEATTLE

22-Oct-04

LOCATION: White River, Washington

P.O.C.: TIM SULLIVAN, LEAD, COST ENGINEERING SECTION

		CURRENT MCACES ESTIMATE PREPARED:				AUTHORIZ./BUDGET YEAR: 2003				FULLY FUNDED ESTIMATE				
		EFFECTIVE PRICING LEVEL: Oct-02				EFFECT. PRICING LEVEL: 1 OCT 02								
ACCOUNT NUMBER	FEATURE DESCRIPTION	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	SPENT FY (\$K)	FEATURE MID PT	OMB COST (\$K)	CNTG (%)	FULL (\$K)
FEDERALLY PREFERRED ALTERNATIVE														
06	FISH AND WILDLIFE FACILITIES													
	Temporary Construction	1,160	174	15%	1,334	1,160	174	15%	1,334		Jul-08	1,233	185	1,418
	Demolition	763	114	15%	877	763	114	15%	877		Jul-08	811	122	933
	Earthworks	252	38	15%	290	252	38	15%	290		Jul-08	268	40	308
	Right Bank Fishway Entrance	191	29	15%	220	191	29	15%	220		Jul-08	203	30	233
	Ogee Weir	1,261	189	15%	1,450	1,261	189	15%	1,450		Jul-08	1,340	201	1,542
	16' Radial Gate	805	121	15%	926	805	121	15%	926		Jul-08	856	128	984
	Fish Screen & Fish Trap Improvements	1,670	251	15%	1,921	1,670	251	15%	1,921		Jul-08	1,775	266	2,041
	Fish Screen Intake	363	54	15%	417	363	54	15%	417		Jul-08	386	58	444
	Incidentals	40	6	15%	46	40	6	15%	46		Jul-08	43	6	49
	Buildings	116	17	15%	133	116	17	15%	133		Jul-08	123	18	142
	Specialized Equipment	876	131	15%	1,007	876	131	15%	1,007		Jul-08	931	140	1,071
	Maintenance Deck	879	132	15%	1,011	879	132	15%	1,011		Jul-08	934	140	1,075
	35' Radial Gate	1,391	209	15%	1,600	1,391	209	15%	1,600		Jan-00	1,479	222	1,700
	TOTAL CONSTRUCTION COSTS	9,767	1,465		11,232	9,767	1,465		11,232			10,382	1,557	11,940
01	LANDS AND DAMAGES													
	Real Estate	663	99	15%	762	663	99	15%	762		Jul-06	672	101	772
20---	PERMANENT MAINTENANCE EQUIPMENT	149	22	15%	171	149	22	15%	171		Jul-08	162	24	186
30---	PLANNING, ENGINEERING AND DESIGN	2,598	390	15%	2,987	2,598	390	15%	2,987		Apr-04	2,631	395	3,026
	Project Management													
	Planning & Environmental Compliance													
	Engineering & Design													
	Engineering Tech Review & VE													
	Real Estate Planning													
	Engineering During Construction													
	Environmental Monitoring:													
31---	CONSTRUCTION MANAGEMENT	977	98	10%	1,074	977	98	10%	1,074		Jul-08	1,059	106	1,165
	Construction Management													
	Project Operation:													
	Project Management													
	TOTAL PROJECT COSTS	14,153	2,074		16,228	14,153	2,074		16,228			14,906	2,183	17,088

Table A1-2 Locally Preferred Plan - Contract Cost Summary

THIS ESTIMATE IS BASED ON THE SCOPE OF WORK FOR THE SECTION 205 REPORT

PROJECT: **MMD FISH PASSAGE** DISTRICT: SEATTLE 22-Oct-04
 LOCATION: **White River, Washington** P.O.C.: TIM SULLIVAN, LEAD, COST ENGINEERING SECTION

CURRENT MCACES ESTIMATE PREPARED: AUTHORIZ./BUDGET YEAR: 2003 FULLY FUNDED ESTIMATE

EFFECTIVE PRICING LEVEL: Oct-02 EFFECT. PRICING LEVEL: 1 OCT 02

ACCOUNT NUMBER	FEATURE DESCRIPTION	COST (\$K)	CNTG (%)	TOTAL (\$K)	COST (\$K)	CNTG (%)	TOTAL (\$K)	SPENT FY (\$K)	FEATURE MID PT (%)	COST (\$K)	CNTG (%)	FULL (\$K)
LOCALLY PREFERRED ALTERNATIVE												
FISH AND WILDLIFE FACILITIES												
06	Temporary Construction	713	15%	820	713	107	820		Jul-08 6.3%	758	114	872
	Demolition	829	15%	953	829	124	953		Jul-08 6.3%	881	132	1,013
	Earthworks	294	15%	338	294	44	338		Jul-08 6.3%	313	47	359
	Right Bank Fishway Entrance	191	15%	220	191	29	220		Jul-08 6.3%	203	30	233
	Fixed Crest Weir	643	15%	739	643	96	739		Jul-08 6.3%	684	103	786
	Rubber Weirs	1,929	15%	2,218	1,929	289	2,218		Jul-08 6.3%	2,051	308	2,358
	35' Radial Gate	1,391	15%	1,600	1,391	209	1,600		Jul-08 6.3%	1,479	222	1,700
	16' Radial Gate	761	15%	875	761	114	875		Jul-08 6.3%	809	121	930
	Fish Screen & Fish Trap Improvements	1,670	15%	1,921	1,670	251	1,921		Jul-08 6.3%	1,775	266	2,041
	Division Intake	1,393	15%	1,602	1,393	209	1,602		Jul-08 6.3%	1,481	222	1,703
	Incidentals	40	15%	46	40	6	46		Jul-08 6.3%	43	6	49
	Buildings	116	15%	133	116	17	133		Jul-08 6.3%	123	18	142
	Specialized Equipment	910	15%	1,047	910	137	1,047		Jul-08 6.3%	967	145	1,112
	Maintenance Deck	879	15%	1,011	879	132	1,011		Jul-08 6.3%	934	140	1,075
	TOTAL CONSTRUCTION COSTS	11,759	15%	13,523	11,759	1,764	13,523			12,500	1,875	14,375
01	LANDS AND DAMAGES											
	Estimate was not developed for the Locally Preferred Plan. The line item amount shown is the estimate for the Federal Plan. The two plans are very similar.											
20---	Real Estate	663	15%	762	663	99	762		Jul-06 1.3%	672	101	772
30---	PERMANENT MAINTENANCE EQUIPMENT	149	15%	171	149	22	171		Jul-08 8.4%	162	24	186
	PLANNING, ENGINEERING AND DESIGN	2,700	15%	3,105	2,700	405	3,105		Apr-04 1.3%	2,735	410	3,145
	Project Management											
	Planning & Environmental Compliance											
	Engineering & Design											
	Engineering Tech Review & VE											
	Real Estate Planning											
	Engineering During Construction											
	Environmental Monitoring:											
31---	CONSTRUCTION MANAGEMENT	1,282	10%	1,410	1,282	128	1,410		Jul-08 8.4%	1,389	139	1,528
	Construction Management											
	Project Operation:											
	Project Management											
	TOTAL PROJECT COSTS	16,553	15%	18,972	16,553	2,419	18,972			17,457	2,549	20,006

A.2 -- Basis for Cost Estimating

A.2.1 ESTIMATE CRITERIA

A.2.1.1 Capital Costs

A.2.1.1.1 MCASES

In general the cost estimate is prepared using the USCOE MCASES cost estimating program and the associated database for estimating the cost of constructed features. The features estimated directly from the database include such items as clearing and grubbing, excavation, backfill, concrete, structural steel, etc. Large specialty items are based on recent price quotes from reputable suppliers and experienced judgment for determining labor and equipment necessary for installation. These costs are detailed in the “Detail Pages” of the MCASES report and are considered direct or unburdened costs. Each line item includes; the quantity of material, number of man-hours, labor cost, equipment cost, material cost, other cost, and a total cost for each item.

A.2.1.1.2 Cost Escalation

MCASES September 2003 costs are escalated to July 2008 using the Civil Works construction cost Index System (CWCCIS)

A.2.1.1.3 General Assumptions

(a) Earthwork Estimating

Native material will be used for the majority of backfill. Price quotes for the rip-rap material cost were quoted by a local quarry (410 Quarry).

(b) Concrete Estimating

The estimate evaluates each concrete feature in terms of square footage of formwork, volume of material, tonnage of reinforcing steel, and volume of concrete placed. The estimate further distinguishes between slabs on grade, walls or piers, and suspended slabs. Reinforcing steel quantities are as a percentage of the reinforced concrete gross area. It is assumed that 5%, 10%, and 15% of the gross area will be steel, for slabs on grade, walls or piers, and suspended slabs respectively. Concrete placement assumes that the majority of the concrete will be placed with a relatively large concrete pumper (180-feet of boom).

(c) Major Equipment

Pricing Quotes were received from the following suppliers on major equipment:

Radial Gates:	Johnson Machine Works Inc.
Ramp Gate:	Golden Harvest
Hydraulic Systems:	Bosch Rexroth Corp.
Rubber Weirs:	Bridgestone Industrial Products - Bridgestone
Fabricated and Sluice Gates:	Tourangeau - Waterman
Log Loader:	Triad Machinery – Link Belt

A.2.1.1.4 Construction Markups

Markups to the direct costs are included in the MCASES construction costs and are calculated as follows:

- Prime Contractor's Field Overhead (FOOH):
10% of: Direct Cost (DIRECT)
- Primes Home Office Expense (HOOH):
3% of: FOOH + DIRECT
- Prime Contractors Profit (PROFIT):
8% of: HOOH + FOOH + DIRECT
- Prime Contractors Bond (BOND):
0.5% of: PROFIT + HOOH + FOOH + DIRECT
- Washington State Sales Tax (TAX)
8.4% of: Equipment and Materials

A.2.1.2 Operating and Maintenance Costs

Operation and maintenance costs are estimated over a 50-year project life. The costs cover weekly operation and inspections, annual maintenance, and two rehabilitations of major mechanical features on a 16-year cycle. These costs are converted to present value dollars based on a discount rate of 5.875 percent. A labor rate of \$60 per hour is assumed. Power costs are based on \$0.06 per kW-Hour.

A.2.1.3 Contingency:

A contingency of 15% is applied to TAX + BOND + PROFIT + HOOH + FOOH + DIRECT.

A.2.1.4 Planning, Engineering, and Design:

The total cost of planning, engineering, and design estimated at 27% of TAX + BOND + PROFIT + HOOH + FOOH + DIRECT applied before escalation. Planning, engineering and design includes project management, planning and environmental compliance, engineering and design, engineering technical review and value engineering, contracting and reprographics, engineering during construction, and project operation.

A.2.1.5 Construction Management

The total cost for construction management is estimated at 11% of: TAX + BOND + PROFIT + HOOH + FOOH + DIRECT.

A.2.1.6 Real Estate Costs

Real Estate costs are based on the land and access easements assessed by the USACE property division. The land area is depicted on Plates 3 and 24 for the Locally and Federally Preferred Plans, respectively.

A.3 -- Federally Preferred Plan

A.3.1 GENERAL

This section describes the costs associated with the Federally Preferred Plan. The costs are described in terms of: construction cost, operation and maintenance costs, real estate costs, planning, and design costs. The construction costs descriptions follow the same organization as the detailed breakdown in the MCASES estimate.

A.3.2 CONSTRUCTION COST

A.3.2.1 Temporary Construction

Temporary construction includes: erosion and sediment control, clearing and grubbing, cofferdams, dewatering, re-surfacing access roads, temporary fishway entrance pipes, and allowance for environmental compliance. Erosion and sediment control measures allows for silt fencing and a detention pond. Cofferdams will be installed in three phases for this Plan. The work setting up the cofferdams should occur during periods when the turbidity is normally high to minimize water quality impacts. Dewatering allows for well points along the excavation to maintain the groundwater at least 2 feet below the subgrade and pumping at the toe of the upstream cofferdam to collect seepage through the cofferdam. Environmental compliance allows for preparation of a monitoring plan, onsite inspection, and for documentation of the compliance.

A.3.2.2 Demolition

Demolition for this plan includes removal of the entire existing timber crib and concrete dam, selected portions of the existing USCOE left bank fish trap, and concrete features associated with the right bank hatchery fishway entrance.

A.3.2.3 Earthworks

The earthworks section includes general features not directly related to specific components of the project. It includes the right bank levee, general dam excavation, and downstream scour protection rip-rap. Specific excavation, backfill and compaction related to the major features, such as the right-bank ladder, ogee weir, radial gate, and fish trap improvements are included in their respective sections.

A.3.2.4 Right Bank Fishway Entrance

Improvements to the right bank fishway entrance include the 24-inch diameter steel supply piping across the river to screen intake, excavation, concrete improvements, backfill, regulating gate with associated electrical and control, and flow baffles.

A.3.2.5 Ogee Weir

The ogee weir sections covers the excavation and backfill for the cutoff walls and the concrete work.

A.3.2.6 16-Foot Radial Gate

The 16-foot radial gate estimate includes: excavation and backfill for cutoff walls and apron, concrete work for the cutoff walls, slabs (at the gate and for the upstream aprons), steel plate armoring for the slabs, concrete for the right pier (left abutment is included in the fish screen and fish trap improvements), and concrete for the upstream divider and excluder walls. It also includes the elevated concrete slab and appurtenant handrail, stairs, and steel stop-logs (with guides). The gate includes: hydraulic pistons, local control panels, and associated hydraulic piping, electrical control conduit, and general lighting electrical.

A.3.2.7 35-Foot Radial Gate

The 35-foot radial gate estimate includes: excavation and backfill for cutoff walls and apron, concrete work for the cutoff walls, slabs (at the gate and for the upstream aprons), steel plate armoring for the slabs, concrete for the right pier (left pier is included in the 16-Foot Radial Gate section), and concrete for the upstream divider wall. It also includes the elevated concrete slab and appurtenant handrail, stairs, and steel stop-logs (with guides). The gate includes hydraulic pistons, local control panels, and associated hydraulic piping, electrical control conduit, and general lighting electrical. (This feature is not shown on the drawings in the 75% submittal).

A.3.2.8 Fish Screen and Fish Trap Improvements

Improvements to the fish screen and fish trap include excavation of the areas adjacent to the existing trap, concrete slabs and walls, appurtenant handrail, stairs, and grating. The fish screen has stainless steel screen and blank panels, adjustable flow baffles behind the screens, supporting structural steel, a hydraulically actuated bypass ramp gate, and a brush cleaning system. Specific improvements to the trap include a number of gates (including a new telescoping fishway entrance gate), new diffuser screen for the auxiliary water supply, new stainless steel holding pool braille and “V” traps (with hoists), and a new sediment control system with pump, valves, piping, and associated electrical and control.

A.3.2.9 Fish Screen Intake

The screen intake includes excavation for the fish screen intake and backfill of the majority of the existing PSE intake. Concrete features include the slab on grade for the intake invert, retaining and guide walls, and an elevated slab over the intake. Handrail, grating, ladders, and steel stop-logs (with guides) are also included.

A.3.2.10 Incidentals

The incidentals section consists of site fencing with gates and hydroseeding.

A.3.2.11 Building

This section includes one new ground level building with concrete masonry walls, a steel roof, interior walls, doors, and windows. The building also includes bathroom facilities, a sewage grinder pump station, heating and ventilation system, and furnishings.

A.3.2.12 Specialized Equipment

The specialized equipment in this section include the general electrical service and motor control center, the electrical grounding, a receptacle for a portable generator, receptacles for a welder and a portable pump, and a portable dewatering pump. Other equipment includes the hydraulic power unit (for the gates) and the debris handler (log loader). Control equipment includes the SCADA panel, communications panel, hydraulic control panel, water level transmitters, and human machine interface (HMI) computer with software and programming.

A.3.2.13 Maintenance Deck

The maintenance deck estimate includes excavation, concrete placement, purchase and installation of concrete bridge girders and guardrails.

A.3.3 OPERATION AND MAINTENANCE COST

A.3.3.1 Trap Operation

Operational trap and haul costs include labor at 32 hours a week on average, year round, and the associated trucking costs. Other operational costs include operating the sediment control system (vertical turbine pump and valving) on an average of 8 hours per week, year round and observing screen cleaning operation an average of 1 hour per week. Average power costs were included for running the sediment control pump, screen cleaner, general lighting, and control systems.

A.3.3.2 Trap Maintenance

Maintenance costs at the trap includes 240 hours labor and inspection and minor repairs per year with an allowance for material and equipment. The tank truck is assumed replaced twice over the 50 year project life (every 16 years), at a cost of \$100,000 (present day based on a recently purchased truck by SPU for the Landsburg Project) the various gates, sediment control pump, and brush cleaning system are also replaced on the same interval.

A.3.3.3 Barrier Dam Operation

Operational costs of the dam is based on 1 hour labor per week, year round, for observing operation of the radial gates and the power costs associated with running the gate.

A.3.3.4 Barrier Dam Maintenance

Maintenance at the dam includes minor repairs on the radial gates on an annual basis with a complete gate rehabilitation twice over the 50 year project life (every 16 years). Debris management includes 520 hours labor a year for operating the log loader trucking. Bedload management includes 40 hours labor a year with an excavator.

A.3.3.5 Cost Summary

Operating and Maintenance costs are presented on titled “Table A3-1 - Federally Preferred Plan - Operation and Maintenance Costs”. This table adjusts all the cost to present value based on a 5.875% annual rate. All costs are in 2003 dollars.

A.3.4 REAL ESTATE COST

A.3.4.1 Land and Features

The land areas are presented Plate 24. The total area required for access, levee and permanent flow easements is 22.17 acres. The area for temporary construction easement is 5.61 acres. The area required for permanent use is 5.61 acres.

A.3.4.2 Appraisal

Total appraisal cost for real estate is \$190,100.

A.3.5 PLANNING AND DESIGN COSTS

The cost for planning and design is based on 27% of the construction cost applied before escalation. This includes costs for civil, mechanical, and electrical design in addition to environmental planning. An additional \$60,000 is allocated for further hydraulic evaluation of the dam features to better understand bedload passage in particular.

A.3.6 CONSTRUCTION MANAGEMENT

The cost for construction management is based on 11% of the construction cost applied before escalation.

Table A.3-1 - Federally Preferred Plan - Operation and Maintenance Costs

50-year Life Cycle

System Component	Weekly Labor, Hour/wk	Periodic Labor Hour/yr	Annual Personnel Cost, \$60/hr	Annual Material Cost, \$/yr	Annual Equipment Cost \$/yr	Annual Labor, Equip. & Material \$/yr	Power kW/day	Annual Power Cost	16-Year Interval Replacement Costs	Present Value of Annual Costs	Present Value of Replacement	Total Present Value of O&M and Replacement Cost
Fish Trap Operation:			60					0.06 \$/kWhr	2003 \$	5.875%	5.875%	2003 \$
Fish Trap and Haul	32		99840		12800	112,640		-		1,806,865		1,806,865
Sediment Control	8		24960			24,960	16	350		406,006		406,006
Screen Cleaning	1		3120			3,120	46	1,007		66,208		66,208
General Lights and Control							2	44		703		703
								-		-		-
								-		-		-
Fish Trap Maintenance												
Fish Trap and Haul									142,274		79,968	79,968
Fish Truck Maintenance		40	2400	600		3,000			100,000	48,123	56,207	104,330
Sediment Control									95,581		53,723	53,723
Screen Cleaning									132,957		74,731	74,731
Bypass Ramp Gate									108,902		61,210	61,210
Annual Inspection		80	4800		1500	6,300				101,059		101,059
Repairs		160	9600	1200	800	11,600				186,076		186,076
			0							-		-
			0							-		-
Dam Operation and Maintenance												
16' Radial Gate	1	48	6000	1500	800	8,300	7	153	52,000	135,600	29,228	164,827
35' Radial Gate	1	60	6720	1500	1200	9,420	7	153	100,000	153,566	56,207	209,773
Debris Management		520	31200		600	31,800				510,106		510,106
Bedload Management		40	2400		2000	4,400				70,581		70,581
Totals	43	948	191,040	4,800	19,700	215,540	78	1,708	731,714	3,484,892	411,274	3,896,165

A.4 -- Locally Preferred Plan

A.4.1 GENERAL

This section describes the costs associated with the Locally Preferred Plan. The costs are described in terms of: construction cost, operation and maintenance costs, real estate costs, planning, and design costs. The construction costs descriptions follow the same organization as the detailed breakdown in the MCASES estimate.

A.4.2 CONSTRUCTION COST

A.4.2.1 Temporary Construction

Temporary construction includes: erosion and sediment control, clearing and grubbing, cofferdams, dewatering, re-surfacing access roads, temporary fishway entrance pipes, and allowance for environmental compliance. Erosion and sediment control measures allows for silt fencing and a detention pond. Cofferdams will be installed in two phases for this Plan. The work setting up the cofferdams should occur during periods when the turbidity is normally high to minimize water quality impacts. Dewatering allows for well points along the excavation to maintain the groundwater at least 2 feet below the subgrade and pumping at the toe of the upstream cofferdam to collect seepage through the cofferdam. Environmental compliance allows for preparation of a monitoring plan, onsite inspection, and for documentation of the compliance.

A.4.2.2 Demolition

Demolition for this plan includes removal of the entire existing timber crib and concrete dam, selected portions of the existing USCOE left bank fish trap, and concrete features associated with the right bank hatchery fishway entrance. Demolition is also included for a house garage located on the left bank just southeast of the PSE intake.

A.4.2.3 Earthworks

The earthworks section includes general features, not directly related to specific components of the project. It includes the right bank levee, general dam excavation, and downstream scour protection rip-rap. This section also includes excavation for the left bank access road just southeast of the PSE intake. Specific excavation, backfill and compaction related to the major features, such as the right-bank ladder, ogee weir, radial gate, and fish trap improvements are included in their respective sections.

A.4.2.4 Right Bank Fishway Entrance

Improvements to the right bank fishway entrance include the 24-inch diameter steel supply piping across the river to screen intake, excavation, concrete improvements, backfill, regulating gate with associated electrical and control, and flow baffles.

A.4.2.5 Fixed Crest Weir

The fixed crest weir section covers the excavation and backfill for the cutoff walls, the concrete work, concrete stoplogs and guide slots, structural steel for walkway, and associated grating, handrail, and stairs.

A.4.2.6 Rubber Weirs

The rubber weir section covers the excavation and backfill for the cutoff walls, the concrete slabs, and the concrete piers. The inflatable rubber weir price includes the weirs, the controls, air compressors, mounting hardware, and appurtenances. Steel stoplogs with guide slots, structural steel for walkway, and associated grating, handrail, and stairs are also included in this section.

A.4.2.7 35-Foot Radial Gate

The 35-foot radial gate estimate includes: excavation and backfill for cutoff walls and apron, concrete work for the cutoff walls, slabs (at the gate and for the upstream aprons), steel plate armoring for the slabs, concrete for the right pier (left pier is included in the 16-Foot Radial Gate section), and concrete for the upstream divider wall. It also includes the elevated concrete slab and appurtenant handrail, stairs, and steel stop-logs (with guides). The gate includes hydraulic pistons, local control panels, and associated hydraulic piping, electrical control conduit, and general lighting electrical.

A.4.2.8 16-Foot Radial Gate

The 16-foot radial gate estimate includes: excavation and backfill for cutoff walls and apron, concrete work for the cutoff walls, slabs (at the gate and for the upstream aprons), steel plate armoring for the slabs, concrete for the right pier (left abutment is included in the fish screen and fish trap improvements), and concrete for the upstream divider and excluder walls. It also includes the elevated concrete slab and appurtenant handrail, stairs, and steel stop-logs (with guides). The gate includes hydraulic pistons, local control panels, and associated hydraulic piping, electrical control conduit, and general lighting electrical.

A.4.2.9 Fish Screen and Fish Trap Improvements

Improvements to the fish screen and fish trap include excavation of the areas adjacent to the existing trap, concrete slabs and walls, appurtenant handrail, stairs, and grating. The fish screen has stainless steel screen and blank panels, adjustable flow baffles behind the screens, supporting structural steel, a hydraulically actuated bypass ramp gate, and a brush cleaning system. Specific improvements to the trap include a number of gates (including a new telescoping fishway entrance gate), new diffuser screen for the auxiliary water supply, new stainless steel holding pool braille and “V” traps (with hoists), and a new sediment control system with pump, valves, piping, and associated electrical and control.

A.4.2.10 Diversion Intake

The diversion intake includes excavation between the 16-foot radial gate apron and the existing PSE intake. Demolition of a portion of the existing intake is included in the demolition section. Concrete features include the slab on grade for the intake invert, repaving the existing intake slab, retaining and guide walls, an elevated slab over the

intake, and extending the existing head gate piers to accommodate stoplogs on the downstream side. The head gates refurbishment includes new steel plating for the gates and a new hydraulic lifting system with controls. Steel plate armoring of the invert of the intake is included. Handrail, grating, ladders, and steel stop-logs (with guides) are also included.

A.4.2.11 Incidentals

The incidentals section consists of site fencing with gates and hydroseeding.

A.4.2.12 Building

This section includes one new ground level building with concrete masonry walls, a steel roof, interior walls, doors, and windows. The building also includes bathroom facilities, a sewage grinder pump station, heating and ventilation system, and furnishings.

A.4.2.13 Specialized Equipment

The specialized equipment in this section includes the general electrical service and motor control center, the electrical grounding, a receptacle for a portable generator, receptacles for a welder and a portable pump, and a portable dewatering pump. Other equipment included are the hydraulic power unit (for the gates) and the debris handler (log loader). Control equipment includes the SCADA panel, communications panel, hydraulic control panel, water level transmitters, and human machine interface (HMI) computer with software and programming.

A.4.2.14 Maintenance Deck

The maintenance deck estimate includes excavation, concrete placement, purchase and installation of concrete bridge girders and guardrails.

A.4.3 OPERATION AND MAINTENANCE COST

A.4.3.1 Trap Operation

Operational trap and haul cost include labor at 32 hours a week on average, year round, and the associated trucking costs. Other operational costs include operating the sediment control on an average of 8 hours per week, year round and observing screen cleaning operation an average of 1 hour per week. Average power costs included for running the sediment control pump, screen cleaner, general lighting, and control.

A.4.3.2 Trap Maintenance

Maintenance costs at the trap includes 240 hours labor of inspection and minor repairs per year with an allowance for material and equipment. The tank truck is assumed replaced twice during the 50-year project life (every 16 years), at a cost of \$100,000 (present day based on a recently purchased truck by SPU for the Landsburg Project) the various gates, sediment control pump, and brush cleaning system are also replaced on the same interval.

A.4.3.3 Barrier Dam Operation

Operational costs of the dam are based on 1 hour labor per week, year round, for observing operation of the 16 foot radial gate, 1 hour for the 35 foot radial gate, 1 hour for the rubber weirs, 10 hours for the head gates, and the power costs associated with running the gates.

A.4.3.4 Barrier Dam Maintenance

Maintenance at the dam includes minor repairs on the radial gates, rubber weirs, and head gates on an annual basis with a complete rehabilitation of the gates twice during the 50-year project life (every 16 years). It is assumed that the rubber weir would be replaced twice during the project life. Debris management includes 520 hours labor a year. Bedload management includes 40 hours labor a year with an excavator.

A.4.3.5 Cost Summary

Operating and Maintenance costs are presented on table titled “Table A4-1 - Locally Preferred Plan - Operation and Maintenance Costs”. This table adjusts all the cost to present value based on a 5.875% annual rate. All costs are in 2003 dollars.

A.4.4 REAL ESTATE COST

The real estate costs are the same for each alternative. See section A.3.3

A.4.5 PLANNING AND DESIGN COSTS

The cost for planning and design is based on 27% of the construction cost applied before escalation. This includes costs for civil, mechanical, and electrical design in addition to environmental planning.

A.4.6 CONSTRUCTION MANAGEMENT

The cost for construction management is based on 11% of the construction cost.

Table A.4-1 - Locally Preferred Plan - Operation and Maintenance Costs
50-year Life Cycle

System Component	Weekly Labor, Hour/wk	Periodic Labor Hour/yr	Annual Personnel Cost, \$60/hr	Annual Material Cost, \$/yr	Annual Equipment Cost \$/yr	Annual Labor, Equip. & Material \$/yr	Power kW/day	Annual Power Cost	16-Year Interval Rehabilitation Costs	Present Value of Annual Costs	Present Value of Replacement	Total Present Value of O&M and Replacement Cost 2003 \$
Fish Trap Operation:			60					0.06 \$/kW/hr	2003 \$	5.875%	5.875%	
Fish Trap and Haul	32		99840		8000	107,840		-		1,729,868		1,729,868
Sediment Control	8		24960			24,960	16	350		406,006		406,006
Screen Cleaning	1		3120			3,120	46	1,007		66,208		66,208
General Lights and Control							2	44		703		703
Fish Trap Maintenance												
Fish Trap and Haul									142,274			79,968
Fish Truck Maintenance		40	2400	600		3,000			100,000	48,123	56,207	104,330
Sediment Control									95,581		53,723	53,723
Screen Cleaning									132,957		74,731	74,731
Bypass Ramp, Gate									108,902		61,210	61,210
Annual Inspection		80	4800		1500	6,300				101,059		101,059
Repairs		160	9600	1200	800	11,600				186,076		186,076
Dam Operation and Maintenance												
16' Radial Gate	1	48	6000	1500	800	8,300	7	153	52,000	135,600	29,228	164,827
35' Radial Gate	1	60	6720	1500	1200	9,420	7	153	100,000	153,566	56,207	209,773
Rubber Dam	1	30	4920	1500	1200	7,620	3	66	674,903	123,287	379,342	502,629
Head Gates	10	40	33600	1500	800	35,900	50	1,095	20,000	593,439	11,241	604,680
Debris Management		520	31200		3000	34,200				548,604		548,604
Bedload Management		40	2400		2000	4,400				70,581		70,581
Totals	54	1,018	229,560	7,800	19,300	256,660	131	2,869	1,426,617	4,163,119	801,857	4,964,976

A.5 -- Plans Comparison

A.5.1 CONSTRUCTION COST

A.5.1.1 Mobilization and General Conditions

The Federally Preferred Plan has a longer duration as a result of more cofferdam phases. This results in a higher cost for site facilities than the Locally Preferred Plan.

A.5.1.2 Temporary Construction

The Federally Preferred Plan has a higher cost due to three phases of cofferdams whereas the Locally Preferred plan has two. The cofferdams also differ between the plans.

A.5.1.3 Demolition

The Locally Preferred Plan includes demolition of existing buildings on the left bank and a portion of the existing PSE intake, which are excluded from the Federally Preferred Plan.

A.5.1.4 Earthworks

The Locally Preferred Plan includes additional earthwork on the left bank for the access road modification and additional excavation for the temporary PSE diversion intake. The right bank levee is more extensive for the Federally Preferred Plan.

A.5.1.5 Right Bank Fishway Entrance

This section is identical for both plans.

A.5.1.6 Ogee Weir

This feature is exclusive to the Federally Preferred Plan.

A.5.1.7 Fixed Crest Weir

This feature is exclusive to the Locally Preferred Plan.

A.5.1.8 Rubber Weirs

This feature is exclusive to the Locally Preferred Plan.

A.5.1.9 35-Foot Radial Gate

This feature is identical to the Locally Preferred Plan.

A.5.1.10 16-Foot Radial Gate

The Federally Preferred Plan 16-foot radial gate includes a larger divider wall on the right side, but has a smaller upstream slab than the Locally Preferred Alternative.

A.5.1.11 Fish Screen and Fish Trap Improvements

In general the improvements are the same between the two plans, however the higher headwater conditions associated with the Federally Preferred Plan require higher concrete walls, more backfill, and taller blank screen panels on the fish screen.

A.5.1.12 Diversion Intake

The diversion intake improvements are much more extensive for the Locally Preferred Plan; requiring more concrete, a temporary diversion channel, more steel plate armoring of the invert, and refurbishment of the head gates.

A.5.1.13 Incidentals

This section is identical for both plans.

A.5.1.14 Building

This section is identical for both plans.

A.5.1.15 Specialized Equipment

This section is the same with the exception that the Locally Preferred Plan includes a larger hydraulic power system.

A.5.1.16 Maintenance Deck

This feature is identical for both plans.

A.5.2 OPERATION AND MAINTENANCE COST

A.5.2.1 Trap Operation

This section is identical for both plans.

A.5.2.2 Trap Maintenance

This section is identical for both plans.

A.5.2.3 Barrier Dam Operation

The Locally Preferred Plan is more power and labor intensive to operate as a result of more mechanical features and the need to closely regulate flow to the diversion.

A.5.2.4 Barrier Dam Maintenance

Maintenance at the dam is more costly for the Locally Preferred Plan resulting from the additional rubber weirs, 35-foot radial gate, and headgates.

A.5.3 REAL ESTATE COST

Real Estate costs are considered identical for both plans.

A.5.4 PLANNING AND DESIGN COSTS

The Locally Preferred Plan is in general more expensive than the Federally Preferred Plan since these cost are based on 27-percent of the construction cost, however the Federally Preferred Plan includes an additional \$60,000 for extra hydraulic evaluation.

*****TOTAL PROJECT COST SUMMARY*****

THIS ESTIMATE IS BASED ON THE SCOPE OF WORK FOR THE SECTION 205 REPORT

PROJECT: MMD FISH PASSAGE DISTRICT: SEATTLE
 LOCATION: White River, Washington P.O.C.: TIM SULLIVAN, LEAD, COST ENGINEERING SECTION

CURRENT MCACES ESTIMATE PREPARED: 02 Jul 03 AUTHORIZED/BUDGET YEAR: 2003 FULLY FUNDED ESTIMATE

EFFECTIVE PRICING LEVEL: Oct-02 EFFECT PRICING LEVEL: 1 OCT 02

ACCOUNT NUMBER	FEATURE DESCRIPTION	COST (\$K)	CNTG (%)	CNTG (\$K)	TOTAL (\$K)	TOTAL (\$K)	SPENT FY (\$K)	FEATURE MID PT. (%)	OMB (%)	COST (\$K)	CNTG (%)	FULL (\$K)
----------------	---------------------	------------	----------	------------	-------------	-------------	----------------	---------------------	---------	------------	----------	------------

FEDERALLY PREFERRED ALTERNATIVE

06	FISH AND WILDLIFE FACILITIES	9,767	1,465	11,232	0.0%	9,767	1,465	11,232	6.3%	10,382	1,557	11,940
----	------------------------------	-------	-------	--------	------	-------	-------	--------	------	--------	-------	--------

TOTAL CONSTRUCTION COSTS

		9,767	1,465	11,232		9,767	1,465	11,232		10,382	1,557	11,940
--	--	-------	-------	--------	--	-------	-------	--------	--	--------	-------	--------

LANDS AND DAMAGES

01		663	99	762	0.0%	663	99	762	1.3%	672	101	772
----	--	-----	----	-----	------	-----	----	-----	------	-----	-----	-----

PERMANENT MAINTENANCE EQUIPMENT

20---		149	22	171	0.0%	149	22	171	8.4%	162	24	186
-------	--	-----	----	-----	------	-----	----	-----	------	-----	----	-----

PLANNING, ENGINEERING AND DESIGN

30---		2,598	390	2,987	0.0%	2,598	390	2,987	1.3%	2,631	395	3,026
-------	--	-------	-----	-------	------	-------	-----	-------	------	-------	-----	-------

CONSTRUCTION MANAGEMENT

31---		977	98	1,074	0.0%	977	98	1,074	8.4%	1,059	106	1,165
-------	--	-----	----	-------	------	-----	----	-------	------	-------	-----	-------

TOTAL PROJECT COSTS

		14,153	2,074	16,228		14,153	2,074	16,228		14,906	2,183	17,088
--	--	--------	-------	--------	--	--------	-------	--------	--	--------	-------	--------

DISTRICT APPROVED:

[Signature]
 CHIEF, COST ENGINEERING SECTION

CHIEF, CIVIL PROGRAMS UNIT

PROJECT MANAGER

CHIEF, REAL ESTATE DIVISION

TOTAL FEDERAL COSTS

TOTAL NON-FEDERAL COSTS

THE MAXIMUM PROJECT COST IS

DIVISION APPROVED:

CHIEF, COST ENGINEERING

DIRECTOR, REAL ESTATE

CHIEF, PROGRAMS MANAGEMENT

DIRECTOR OF PPMD

APPROVED DATE:

*****TOTAL CONTRACT COST SUMMARY*****

THIS ESTIMATE IS BASED ON THE SCOPE OF WORK FOR THE SECTION 205 REPORT

PROJECT: MMD FISH PASSAGE DISTRICT: SEATTLE 17-Dec-04
 LOCATION: White River, Washington P.O.C.: TIM SULLIVAN, LEAD, COST ENGINEERING SECTION

CURRENT MCAGES ESTIMATE PREPARED:		FULLY FUNDED ESTIMATE												
EFFECTIVE PRICING LEVEL: Oct-02		EFFECT. PRICING LEVEL: 1. OCT 02												
ACCOUNT NUMBER	FEATURE DESCRIPTION	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	SPENT FY (\$K)	FEATURE MID PT	OMB (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
FEDERALLY PREFERRED ALTERNATIVE														
06	<u>FISH AND WILDLIFE FACILITIES</u>													
	Temporary Construction	1,160	174	15%	1,334	1,160	174	1,334		Jul-08	6.3%	1,233	185	1,418
	Demolition	763	114	15%	877	763	114	877		Jul-08	6.3%	811	122	933
	Earthworks	252	38	15%	290	252	38	290		Jul-08	6.3%	268	40	308
	Right Bank Fishway Entrance	191	29	15%	220	191	29	220		Jul-08	6.3%	203	30	233
	Ogee Weir	1,261	189	15%	1,450	1,261	189	1,450		Jul-08	6.3%	1,340	201	1,542
	16' Radial Gate	805	121	15%	926	805	121	926		Jul-08	6.3%	856	128	984
	Fish Screen & Fish Trap Improvements	1,670	251	15%	1,921	1,670	251	1,921		Jul-08	6.3%	1,775	266	2,041
	Fish Screen Intake	363	54	15%	417	363	54	417		Jul-08	6.3%	386	58	444
	Incidentals	40	6	15%	46	40	6	46		Jul-08	6.3%	43	6	49
	Buildings	116	17	15%	133	116	17	133		Jul-08	6.3%	123	18	142
	Specialized Equipment	876	131	15%	1,007	876	131	1,007		Jul-08	6.3%	931	140	1,071
	Maintenance Deck	879	132	15%	1,011	879	132	1,011		Jul-08	6.3%	934	140	1,075
	35' Radial Gate	1,391	209	15%	1,600	1,391	209	1,600		Jan-00	6.3%	1,479	222	1,700
	TOTAL CONSTRUCTION COSTS	9,767	1,465		11,232	9,767	1,465	11,232				10,382	1,557	11,940
01	<u>LANDS AND DAMAGES</u>													
	Real Estate	663	99	15%	762	663	99	762		Jul-06	1.3%	672	101	772
20---	<u>PERMANENT MAINTENANCE EQUIPMENT</u>	149	22	15%	171	149	22	171		Jul-08	8.4%	162	24	186
30---	<u>PLANNING, ENGINEERING AND DESIGN</u>	2,598	390	15%	2,987	2,598	390	2,987		Apr-04	1.3%	2,631	395	3,026
	Project Management													
	Planning & Environmental Compliance													
	Engineering & Design													
	Engineering Tech Review & VE													
	Real Estate Planning													
	Engineering During Construction													
	Environmental Monitoring:													
31---	<u>CONSTRUCTION MANAGEMENT</u>	977	98	10%	1,074	977	98	1,074		Jul-08	8.4%	1,059	106	1,165
	Construction Management													
	Project Operation:													
	Project Management													
	TOTAL PROJECT COSTS	14,153	2,074		16,228	14,153	2,074	16,228				14,906	2,183	17,088

Tri-Service Automated Cost Engineering System (TKACES)
PROJECT MMIFPB: White River Barrier - Federally Preferred Alternative
White River Diversion Dam

White River Barrier
Federally Preferred Alternative

Designed By: MONTGOMERY WATSON HARZA
Estimated By: RICHARD GALLIAS

Prepared By: RICHARD GALLIAS

Preparation Date: 09/25/03
Effective Date of Pricing: 09/25/03
Est Construction Time: 820 Days
Sales Tax: 8.9%

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** PROJECT INDIRECT SUMMARY - Scope (Rounded to 1000's) **

	QUANTITY	UOM	DIRECT	FOOH	HOOH	PROFIT	BOND	B&O Tax	TOTAL COST	UNIT COST
02 Temporary Construction			929,000	93,000	31,000	84,000	17,000	6,000	1,160,000	
03 Demolition			611,000	61,000	20,000	55,000	11,000	4,000	763,000	
04 Earthworks			202,000	20,000	7,000	18,000	4,000	1,000	252,000	
05 Right Bank Fishway Entrance			153,000	15,000	5,000	14,000	3,000	1,000	191,000	
06 Ogee Weir			1,010,000	101,000	33,000	92,000	19,000	6,000	1,261,000	
07 16' Radial Gate			645,000	65,000	21,000	58,000	12,000	4,000	805,000	
08 Fish Screen & Fish Trap Improvem			1,338,000	134,000	44,000	121,000	25,000	8,000	1,670,000	
09 Fish Screen Intake			291,000	29,000	10,000	26,000	5,000	2,000	363,000	
10 Incidentals			32,000	3,000	1,000	3,000	1,000	0	40,000	
11 Buildings			93,000	9,000	3,000	8,000	2,000	1,000	116,000	
12 Specialized Equipment			702,000	70,000	23,000	64,000	13,000	4,000	876,000	
13 Maintenance Deck	1.00	JOB	704,000	70,000	23,000	64,000	13,000	4,000	879,000	879262.03
14 35' Radial Gate			1,114,000	111,000	37,000	101,000	20,000	7,000	1,391,000	
TOTAL White River Barrier			7,825,000	782,000	258,000	709,000	144,000	49,000	9,767,000	

1. Bond & Insurance		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
01. Mobilization / General Condition											
USR AA <01036 0335 >	Bonding & Insurance	1.00	LS	UFLDSUGE1	0	0	0	0	0	0	0.00
TOTAL Mobilization / General Condition											
02. Temporary Construction											
M MIL AA <02266 1120 >	Filter Fencing polypropylene	1100.00	LF	ALABCLAB2	50	1,364	0	2,396	0	3,760	3.42
RSM AA <02270 0100 >	Detention Pond Rip Rap	20.00	CY	UOEHB12G	5	174	92	410	0	676	33.79
MIL AA <02270 1120 >	Detention Pond Washed Rock	20.00	CY	COETB3B	3	74	34	392	0	500	24.99
CIV AA <02267 0200 >	Detention Pond Filter Fabric	100.00	SF	USKCF	0	12	1	63	0	76	0.76
MIL AA <02667 5080 >	Detention Pond 8" PVC Drainline	100.00	LF	ULABB20A	7	227	0	252	0	479	4.79
L MIL AA <02224 7110 >	Detention Pond Excavation dozer	500.00	CY	CODTB10L	94	3,059	1,500	0	0	4,559	9.12
RSM AA <02240 0020 >	Detention Pond Decommissioning/Backfill w/dozer	500.00	CY	CODTB15	12	350	450	2,723	0	3,523	7.05
L AF AA <02110 0600 >	Stripping of Plants & Trees	2.00	ACR	CODTB11A	161	5,000	4,476	0	0	9,476	4737.93
MIL AA <02234 0545 >	Hauling Debris cyc/hr	520.00	CY	COEIB34B	19	541	759	0	0	1,300	2.50
CIV AA <02091 5010 >	Disposal of Debris charge	520.00	CY	N/A	0	0	0	0	35,532	35,532	68.33
CIV AA <02267 0200 >	Membrane Lining Material & Placement	11000	SF	USKCF	44	1,320	110	6,948	0	8,378	0.76
L AF AA <02240 0030 >	Borrow Material Placement & Shaping	1800.00	CY	CODTB10B	90	2,925	3,375	0	0	6,300	3.50
M RSM AA <02270 0100 >	3" - 12" Rip Rap Material Placement	190.00	CY	UOEHB12G	49	1,651	878	0	0	2,529	13.31
B RSM AA <02270 0100 >	4" - 24" Rip Rap Material Placement	200.00	CY	UOEHB12G	204	6,869	3,652	0	0	10,520	52.60
L CIV AA <02232 0160 >	Cofferdam Removal	2520.00	CY	CODEB12D	126	4,247	7,890	0	0	12,137	4.82
MIL AA <02270 1120 >	3" - 12" Rip Rap Material	190.00	CY	COETB3B	24	703	319	3,726	0	4,749	24.99
MIL AA <02270 1140 >	4" - 24" Rip Rap Material	200.00	CY	COETB3B	25	740	336	4,175	0	5,251	26.26
MIL AA <02270 1160 >	6" - 48" Rip Rap Material	300.00	CY	COETB3B	38	1,110	504	6,890	0	8,504	28.35
M RSM AA <02270 0100 >	6" - 48" Rip Rap Placement	300.00	CY	UOEHB12G	77	2,607	1,386	0	0	3,993	13.31
MIL AA <02232 0140 >	Excavation of onsite borrow material	1800.00	CY	CODEB12C	28	936	864	0	0	1,800	1.00
MIL AA <02234 2200 >	Onsite hauling and stockpile material	4320.00	CY	CTDHB34F	45	1,253	2,246	0	0	3,499	0.81
CIV AA <02267 0200 >	Membrane Lining Material & Placement	12600	SF	USKCF	50	1,512	126	7,958	0	9,596	0.76
B RSM AA <02270 0100 >	4" - 24" Rip Rap Material Placement	180.00	CY	UOEHB12G	184	6,182	3,286	0	0	9,468	52.60
L CIV AA <02232 0160 >	Cofferdam Removal	4300.00	CY	CODEB12D	215	7,247	13,463	0	0	20,710	4.82
MIL AA <02270 1140 >	4" - 24" Rip Rap Material	180.00	CY	COETB3B	23	666	302	3,758	0	4,726	26.26
MIL AA <02270 1160 >	6" - 48" Rip Rap Material	1400.00	CY	COETB3B	175	5,180	2,352	32,154	0	39,686	28.35
M RSM AA <02270 0100 >	6" - 48" Rip Rap Placement	1400.00	CY	UOEHB12G	361	12,166	6,468	0	0	18,634	13.31
MIL AA <02232 0140 >	Excavation of onsite borrow material	2700.00	CY	CODEB12C	42	1,404	1,296	0	0	2,700	1.00
L AF AA <02240 0030 >	Borrow Material Placement & Shaping	2700.00	CY	CODTB10B	135	4,388	5,063	0	0	9,450	3.50

Tri-Service Automated Cost Engineering System (RACES)
 PROJECT MMIFPB: White River Barrier - Federally Preferred Alternative
 White River Diversion Dam
 02. Temporary Construction

04. Cofferdams - Phase II		QUANTY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
MIL AA	<02234 2200 > Onsite hauling and stockpile material	7000.00	CY	CTDHB34F	73	2,030	3,640	0	0	5,670	0.81
CIV AA	<02267 0200 > Membrane Lining Material & Placement	12100	SF	USKCF	48	1,452	121	7,643	0	9,216	0.76
AF AA	<02240 0030 > Borrow Material Placement	4100.00	CY	CODTB10B	49	1,599	1,845	0	0	3,444	0.84
B RSM AA	<02270 0100 > 3" - 12" Rip Rap Material Placement	600.00	CY	UOEHB12G	606	20,403	10,847	0	0	31,251	52.08
B RSM AA	<02270 0100 > 4" - 24" Rip Rap Material Placement	1800.00	CY	UOEHB12G	1,818	61,210	32,542	0	0	93,753	52.08
L CIV AA	<02232 0160 > Cofferdam Removal	6200.00	CY	CODEB12D	248	8,359	15,529	0	0	23,889	3.85
MIL AA	<02270 1120 > 3" - 12" Rip Rap Material	600.00	CY	COETB3B	75	2,220	1,008	11,768	0	14,996	24.99
MIL AA	<02270 1140 > 4" - 24" Rip Rap Material	1800.00	CY	COETB3B	225	6,660	3,024	37,577	0	47,261	26.26
MIL AA	<02270 1160 > 6" - 48" Rip Rap Material	1800.00	CY	COETB3B	225	6,660	3,024	41,341	0	51,025	28.35
M RSM AA	<02270 0100 > 6" - 48" Rip Rap Placement	1800.00	CY	UOEHB12G	465	15,642	8,316	0	0	23,958	13.31
MIL AA	<02232 0140 > Excavation of onsite borrow material	4100.00	CY	CODEB12C	63	2,132	1,968	0	0	4,100	1.00
MIL AA	<02234 2200 > Onsite hauling and stockpile material	10300	CY	CTDHB34F	107	2,987	5,356	0	0	8,343	0.81
B MIL AA	<02140 2200 > Dewatering System Maintenance and Operation	1.00	LS		0	25,000	5,000	0	5,000	35,000	35000.00
AFH AA	<02086 5136 > 18" Dia x 50' Deep Well Installation	400.00	LF	CLADB23	1,481	40,356	9,948	0	0	50,304	125.76
MIL AA	<15288 4040 > 8 - 50 GPM Dewatering Pumps	8.00	EA	MPLUQ1	75	2,836	0	17,002	0	19,838	2479.74
L AF AA	<16513 6080 > 15 KVA Standby Power Generator	9.00	MO	EELER19	279	11,250	0	13,421	0	24,671	2741.20
MIL AA	<15155 2560 > 6" PVC Header Manifold Pipe	400.00	LF	MPLUQ1	75	2,836	0	1,921	0	4,757	11.89
MIL AA	<15155 2510 > 2" PVC Header Manifold Pipe	400.00	LF	MPLUQ1	50	1,884	0	344	0	2,228	5.57
HTW AA	<02086 6123 > Well Abandonment	725.00	CF	ULABW8	870	26,194	6,163	28,526	0	60,882	83.98
B MIL AA	<15288 4040 > 8 - 140 GPM Seepage Control Pumps	8.00	EA	MPLUQ1	128	4,821	0	39,788	0	44,608	5576.03
MIL AA	<15155 2540 > 4" PVC Header Manifold Pipe	320.00	LF	MPLUQ1	48	1,818	0	805	0	2,623	8.20
MIL AA	<15155 2570 > 8" PVC Header Manifold Pipe	480.00	LF	MPLUQ2	118	4,550	0	3,513	0	8,063	16.80
MIL AA	<02244 1510 > Left Bank areas	740.00	CY	COFGB36C	68	2,198	2,375	19,550	0	24,123	32.60
MIL AA	<02244 1510 > Right Bank areas	330.00	CY	COFGB36C	30	980	1,059	8,718	0	10,758	32.60
B MIL AA	<02710 2260 > 78" dia Left Bank Culvert	170.00	LF	CLABB14	0	0	0	8,516	0	8,516	50.09
B MIL AA	<02710 2240 > 36" dia Right Bank Culvert	100.00	LF	CLABB14	0	0	0	2,831	0	2,831	28.31
B MIL AA	<02710 2240 > 36" dia Right Bank Culvert Installation	100.00	LF	CLABB14	69	1,967	150	0	0	2,117	21.17
B MIL AA	<02710 2260 > 78" dia Left Bank Culvert Removal	170.00	LF	CLABB14	157	4,458	340	0	0	4,798	28.22
B MIL AA	<02710 2240 > 36" dia Right Bank Culvert Removal	100.00	LF	CLABB14	69	1,967	150	0	0	2,117	21.17
B MIL AA	<02710 2260 > 78" dia Left Bank Installation	170.00	LF	CLABB14	157	4,458	340	0	0	4,798	28.22
USR AA	<01036 0552 > Monitoring Plan	1.00	LS		172	10,000	0	0	0	10,000	10000.00
L MIL AA	<01036 0300 > Site Inspections	320.00	HR	UFLDSUGE1	850	32,000	0	0	0	32,000	100.00

3. Environmental Compliance		QUANTITY	UOM	CREW	ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
USR AA	<01036 0552 > Compliance Report	1.00	LS			172	15,000	0	0	0	15,000	15000.00
TOTAL Temporary Construction												
						11,158	399,833	173,974	315,108	40,532	929,446	
33. Demolition												
L MIL AA	<02046 2115 > Demolish Dam Concrete	3580.00	CY	CODLB6		9,947	290,946	42,960	0	0	333,906	93.27
MIL AA	<02234 0545 > Hauling Debris	3580.00	CY	COEIB34B		133	3,723	5,227	0	0	8,950	2.50
cyc/hr)												
CIV AA	<02091 5010 > Disposal of Debris	3580.00	CY	N/A		0	0	0	0	244,621	244,621	68.33
charge												
MIL AA	<02046 2115 > Demolish COE Ladder Concrete	131.00	CY	CODLB6		374	10,948	1,616	0	0	12,564	95.91
MIL AA	<02234 0545 > Hauling Debris	131.00	CY	COEIB34B		5	136	191	0	0	328	2.50
cyc/hr)												
CIV AA	<02091 5010 > Disposal of Debris	131.00	CY	N/A		0	0	0	0	8,951	8,951	68.33
charge												
MIL AA	<02046 2115 > Demolish Muckleshoot Ladder	10.00	CY	CODLB6		29	836	123	0	0	959	95.91
Concrete												
MIL AA	<02234 0545 > Hauling Debris	10.00	CY	COEIB34B		0	10	15	0	0	25	2.50
cyc/hr)												
CIV AA	<02091 5010 > Disposal of Debris	10.00	CY	N/A		0	0	0	0	683	683	68.33
charge												
						10,488	306,599	50,133	0	254,256	610,987	
TOTAL Demolition												
34. Earthworks												
L CIV AA	<02232 0160 > Loading & Hauling from onsite	2600.00	CY	CODEB12D		125	4,153	7,800	0	0	11,953	4.60
borrow material												
CIV AA	<02267 0200 > Geotextile Material &	28900	SF	USKCF		116	3,468	289	18,254	0	22,011	0.76
Installation												
RSM AA	<02270 0100 > 12" Rip Rap Material	270.00	CY	UOEHB12G		70	2,346	1,247	5,531	0	9,124	33.79
AF AA	<02240 0030 > Placement and Shaping of Levee	2600.00	CY	CODTB10B		31	1,014	1,170	0	0	2,184	0.84
Material												
MIL AA	<02228 0322 > 4" Rip Rap Ditch 900 LF	90.00	CY	CODEB12A		1	36	23	0	0	59	0.65
M RSM AA	<02270 0100 > 12" Rip Rap Material Placement	270.00	CY	UOEHB12G		70	2,346	1,247	0	0	3,594	13.31
MIL AA	<02244 1510 > Crushed Rock Surfacing for levee	200.00	CY	COFGB36C		18	594	642	5,284	0	6,520	32.60
roadway areas												
MIL AA	<02752 1030 > Type I Catch Basin at end of	1.00	EA	ACARC14H		48	1,695	30	803	0	2,528	2527.86
Levee Ditch deep												
MIL AA	<02764 2560 > 12" CMP Drain from Catch Basin	160.00	LF	CLABB14		35	989	75	1,005	0	2,069	12.93
MIL AA	<02232 0140 > Excavate & load, hydr excavator,	14270	CY	CODEB12C		220	7,420	6,850	0	0	14,270	1.00
2 CY, medium matl												
M RSM AA	<02270 0100 > 72" Rip-rap Installation	570.00	CY	UOEHB12G		147	4,955	2,632	19,243	0	26,830	47.07
B CIV AA	<02250 2130 > Filter fabric	15300	SF	ULABA2		248	6,579	1,209	9,997	0	17,785	1.16
AF AA	<02244 1530 > Filter Gravel	3700.00	CY	COFGB36C		177	5,734	6,193	71,117	0	83,044	22.44
						1,305	41,330	29,407	131,234	0	201,971	
TOTAL Earthworks												

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
05. Right Bank Fishway Entrance										
MIL AA <02232 0140 >	360.00	CY	CODEB12C	6	187	173	0	0	360	1.00
MIL AA <02234 2200 >	360.00	CY	CTDHB34F	4	104	187	0	0	292	0.81
AF AA <02240 0030 >	170.00	CY	CODTB10B	2	66	77	0	0	143	0.84
CIV AA <02664 2180 >	370.00	LF	UOEHB21A	315	10,556	1,791	20,646	0	32,993	89.17
MIL AA <03170 3060 >	90.00	SF	ACARC1	8	276	0	76	0	353	3.92
MIL AA <03217 0600 >	2.00	TON	SIWRRODM4	28	1,225	0	1,145	0	2,370	1185.17
RSM AA <03326 0300 >	21.00	CY	N/A	0	0	0	1,570	0	1,570	74.76
MIL AA <03372 4650 >	21.00	CY	CLABC20	7	210	67	0	0	277	13.19
AF AA <03150 7100 >	540.00	SF	ACARC1	54	1,814	0	271	0	2,085	3.86
MIL AA <03217 0600 >	5.40	TON	SIWRRODM4	75	3,309	0	3,091	0	6,400	1185.17
RSM AA <03326 0300 >	18.00	CY	N/A	0	0	0	1,346	0	1,346	74.76
MIL AA <03372 1500 >	18.00	CY	CLABC20	7	208	67	0	0	275	15.25
MIL AA <03182 4600 >	2500.00	SF	ACARC2	400	13,825	0	4,737	0	18,562	7.42
MIL AA <03217 0750 >	8.80	TON	SIWRRODM4	70	3,100	0	5,038	0	8,138	924.76
RSM AA <03326 0300 >	48.00	CY	N/A	0	0	0	3,588	0	3,588	74.76
MIL AA <03372 5100 >	48.00	CY	CLABC20	28	805	259	0	0	1,065	22.18
MIL AA <05523 0530 >	50.00	LF	SIWSE4	10	469	13	613	0	1,094	21.88
CIV AA <02664 2180 >	370.00	LF	UOEHB21A	315	10,556	1,791	20,646	0	32,993	89.17
CIV AA <02664 8180 >	4.00	EA	UOEHB21A	34	1,143	194	11,291	0	12,627	3156.81
CIV AA <02664 8440 >	1.00	EA	UOEHB21A	9	286	48	2,171	0	2,506	2505.59
USR AA <13900 0006 >	1.00	EA		0	500	1,000	9,518	0	11,018	11017.86
USR AA <13900 0002 >	1.00	EA		0	500	250	1,960	0	2,710	2710.20
RSM AA <16017 1750 >	480.00	LF	EELLEE1C1	43	1,714	0	826	0	2,539	5.29
MIL AA <16018 0540 >	480.00	LF	EELLEE1C1	41	1,661	0	1,066	0	2,727	5.68
USR AA <11270 0011 >	80.00	SF		0	960	1,760	1,917	0	4,637	57.96
TOTAL Right Bank Fishway Entrance										
	1,455			53,475	7,676	91,516	0	0	152,667	
06. Ogee Weir										
MIL AA <02232 0140 >	2684.00	CY	CODEB12C	41	1,396	1,288	0	0	2,684	1.00
MIL AA <02234 2200 >	2684.00	CY	CTDHB34F	28	778	1,396	0	0	2,174	0.81
AF AA <02240 0030 >	2024.00	CY	CODTB10B	24	789	911	0	0	1,700	0.84
MIL AA <03170 3060 >	3168.00	SF	ACARC1	290	9,726	0	2,691	0	12,417	3.92
MIL AA <03217 0600 >	211.00	TON	SIWRRODM4	2,936	129,286	0	120,786	0	250,072	1185.17
RSM AA <03326 0300 >	2112.00	CY	N/A	0	0	0	157,893	0	157,893	74.76
L MIL AA <03372 4650 >	2112.00	CY		731	21,078	44,352	0	0	65,430	30.98
AF AA <03150 7100 >	5808.00	SF	ACARC1	581	19,515	0	2,909	0	22,424	3.86
MIL AA <03217 0600 >	70.00	TON	SIWRRODM4	974	42,891	0	40,071	0	82,962	1185.17
RSM AA <03326 0300 >	695.00	CY	N/A	0	0	0	51,958	0	51,958	74.76
L MIL AA <03372 1500 >	695.00	CY		278	8,020	14,595	0	0	22,615	32.54

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
MIL AA <03182 4600 > Cutoff Walls Formwork blt plywood	11655	SF	ACARC2	1,865	64,452	0	22,085	0	86,537	7.42
MIL AA <03217 0750 > Cutoff Walls Reinforcing Steel	128.00	TON	SIWRRODM4	1,024	45,097	0	73,273	0	118,370	924.76
RSM AA <03326 0300 > Cutoff Walls Material	642.00	CY	N/A	0	0	0	47,996	0	47,996	74.76
L MIL AA <03372 5100 > Cutoff Walls Placement	642.00	CY		374	10,773	13,482	0	0	24,255	37.78
RSM AA <02240 0020 > Structural Backfill w/dozer	326.00	CY	CODTBT15	8	228	293	1,775	0	2,297	7.05
MIL AA <03158 0010 > Foundation Formwork	422.00	SF	ACARC1	36	1,211	0	1,103	0	2,314	5.48
MIL AA <03217 0550 > Foundation Reinforcing Steel	29.00	TON	SIWRRODM4	258	11,353	0	15,727	0	27,080	933.79
RSM AA <03326 0300 > Foundation Material	286.00	CY	N/A	0	0	0	21,381	0	21,381	74.76
L MIL AA <03372 2950 > Foundation Placement	286.00	CY		46	1,321	6,006	0	0	7,327	25.62
TOTAL Ogee Weir										
	9,491			367,914	82,323	559,648	0	0	1,009,885	
07. 16' Radial Gate										
MIL AA <02232 0140 > Excavation	1550.00	CY	CODEB12C	24	806	744	0	0	1,550	1.00
MIL AA <02234 2200 > Onsite hauling and stockpile material	1550.00	CY	CTDHB34F	16	449	806	0	0	1,256	0.81
AF AA <02240 0030 > Backfill from stockpiled material	90.00	CY	CODTBT10B	1	35	41	0	0	76	0.84
RSM AA <02240 0020 > Structural Backfill w/dozer	40.00	CY	CODTBT15	1	28	36	218	0	282	7.05
AF AA <03150 7100 > Pier Formwork	2900.00	SF	ACARC1	290	9,744	0	1,453	0	11,197	3.86
MIL AA <03217 0600 > Pier Reinforcing Steel	68.00	TON	SIWRRODM4	946	41,666	0	38,926	0	80,592	1185.17
RSM AA <03326 0300 > Pier Material	225.00	CY	N/A	0	0	0	16,821	0	16,821	74.76
L MIL AA <03372 1500 > Pier Placement	225.00	CY		90	2,597	4,725	0	0	7,322	32.54
MIL AA <03170 3060 > Slab on Grade Formwork	300.00	SF	ACARC1	27	921	0	255	0	1,176	3.92
MIL AA <03217 0600 > Slab on Grade Reinforcing Steel	22.00	TON	SIWRRODM4	306	13,480	0	12,594	0	26,074	1185.17
RSM AA <03326 0300 > Slab on Grade Material	219.00	CY	N/A	0	0	0	16,372	0	16,372	74.76
L MIL AA <03372 4650 > Slab on Grade Placement	219.00	CY		76	2,186	4,599	0	0	6,785	30.98
MIL AA <03182 4600 > Cutoff Walls Formwork blt plywood	520.00	SF	ACARC2	83	2,876	0	985	0	3,861	7.42
MIL AA <03217 0750 > Cutoff Walls Reinforcing Steel	6.20	TON	SIWRRODM4	50	2,184	0	3,549	0	5,734	924.76
RSM AA <03326 0300 > Cutoff Walls Material	31.00	CY	N/A	0	0	0	2,318	0	2,318	74.76
L MIL AA <03372 5100 > Cutoff Walls Placement	31.00	CY		18	520	651	0	0	1,171	37.78
MIL AA <03182 4600 > Divider Walls Formwork blt plywood	3500.00	SF	ACARC2	560	19,355	0	6,632	0	25,987	7.42
MIL AA <03217 0750 > Divider Walls Reinforcing Steel	39.00	TON	SIWRRODM4	312	13,740	0	22,325	0	36,066	924.76
RSM AA <03326 0300 > Divider Walls Material	193.00	CY	N/A	0	0	0	14,429	0	14,429	74.76
L MIL AA <03372 5100 > Divider Walls Placement	193.00	CY		112	3,239	4,053	0	0	7,292	37.78
AF AA <03150 7100 > Elevated Slab Formwork	480.00	SF	ACARC1	48	1,613	0	240	0	1,853	3.86
MIL AA <03217 0600 > Elevated Slab Reinforcing Steel	4.20	TON	SIWRRODM4	58	2,573	0	2,404	0	4,978	1185.17
RSM AA <03326 0300 > Elevated Slab Material	14.00	CY	N/A	0	0	0	1,047	0	1,047	74.76
L MIL AA <03372 1500 > Elevated Slab Placement	14.00	CY		6	162	294	0	0	456	32.54
MIL AA <03170 3060 > Upstream Apron Slab Formwork	220.00	SF	ACARC1	20	675	0	187	0	862	3.92
MIL AA <03217 0600 > Upstream Apron Slab Reinforcing Steel	15.00	TON	SIWRRODM4	209	9,191	0	8,587	0	17,778	1185.17
RSM AA <03326 0300 > Upstream Apron Slab Material	147.00	CY	N/A	0	0	0	10,990	0	10,990	74.76
L MIL AA <03372 4650 > Upstream Apron Slab Placement	147.00	CY		51	1,467	3,087	0	0	4,554	30.98

		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
MIL AA	<03182 4600 > Excluder Walls Formwork blt plywood	400.00	SF	ACARC2	64	2,212	0	758	0	2,970	7.42
MIL AA	<03217 0750 > Excluder Walls Reinforcing Steel	1.00	TON	SIWRRODM4	8	352	0	572	0	925	924.76
RSM AA	<03326 0300 > Excluder Walls Material	10.00	CY	N/A	0	0	0	748	0	748	74.76
L MIL AA	<03372 5100 > Excluder Walls Placement	10.00	CY		6	168	210	0	0	378	37.78
MIL AA	<05523 0530 > Handrail	69.00	LF	SIWSE4	14	647	17	845	0	1,510	21.88
MIL AA	<05511 1500 > Stairs	27.00	SF	SIWSE4	5	253	7	617	0	877	32.50
USR AA	<13900 0007 > Stoplog Slot Guides	3700.00	LB		0	2,775	2,035	5,037	0	9,847	2.66
USR AA	<13900 0008 > Steel Stoplogs	8200.00	LB		0	6,150	4,510	11,162	0	21,822	2.66
USR AA	<13900 0018 > 16' Radial Gate	1.00	EA		0	0	0	118,701	0	118,701	118701.00
USR AA	<13900 0019 > 16' Radial Gate pistons with transmitters and local control	1.00	EA		0	0	0	49,947	0	49,947	49946.99
USR AA	<13900 0020 > Gate Installation and Startup	1.00	EA		0	32,000	3,000	1,307	0	36,307	36306.80
RSM AA	<16017 1750 > 1" GRC 4x12 Gauge Wiring	220.00	LF	EELEEELE1	20	785	0	379	0	1,164	5.29
MIL AA	<16018 0540 > 3/4" GRC 6x12 Gauge Wiring	40.00	LF	EELEEELE1	3	138	0	89	0	227	5.68
MIL AA	<15162 3014 > Pipe sst sched 40, 1", type 304, threaded, cpig 10' OC, no hangers	60.00	LF	MPLUPLUM1	10	409	0	657	0	1,065	17.75
B MIL AA	<05314 6100 > 1/2" Steel Armorary Plate with Studs	3060.00	SF		306	18,360	6,120	65,314	0	89,794	29.34
TOTAL 16' Radial Gate					3,740	193,757	34,935	416,464	0	645,155	
08. Fish Screen & Fish Trap Improvem											
MIL AA	<02232 0140 > Excavation	220.00	CY	CODEB12C	3	114	106	0	0	220	1.00
MIL AA	<02234 2200 > Onsite hauling and stockpile material	220.00	CY	CTDHB34F	2	64	114	0	0	178	0.81
AF AA	<02240 0030 > Backfill from stockpiled material	1400.00	CY	CODTB10B	17	546	630	0	0	1,176	0.84
RSM AA	<02240 0020 > Structural Backfill w/dozer	250.00	CY	CODTB15	6	175	225	1,361	0	1,761	7.05
MIL AA	<03217 0600 > Lower Slab on Grade Reinforcing Steel	36.00	TON	SIWRRODM4	501	22,058	0	20,608	0	42,666	1185.17
RSM AA	<03326 0300 > Lower Slab on Grade Material	361.00	CY	N/A	0	0	0	26,988	0	26,988	74.76
L MIL AA	<03372 4650 > Lower Slab on Grade Placement	361.00	CY		125	3,603	7,581	0	0	11,184	30.98
MIL AA	<03217 0600 > Upper Slab on Grade Reinforcing Steel	14.00	TON	SIWRRODM4	195	8,578	0	8,014	0	16,592	1185.17
RSM AA	<03326 0300 > Upper Slab on Grade Material	141.00	CY	N/A	0	0	0	10,541	0	10,541	74.76
L MIL AA	<03372 4650 > Upper Slab on Grade Placement	141.00	CY		49	1,407	2,961	0	0	4,368	30.98
MIL AA	<03182 4600 > Ladder Walls Formwork blt plywood	4800.00	SF	ACARC2	768	26,544	0	9,095	0	35,639	7.42
MIL AA	<03217 0750 > Ladder Walls Reinforcing Steel	23.00	TON	SIWRRODM4	184	8,103	0	13,166	0	21,270	924.76
RSM AA	<03326 0300 > Ladder Walls Material	116.00	CY	N/A	0	0	0	8,672	0	8,672	74.76
L MIL AA	<03372 5100 > Ladder Walls Placement	116.00	CY		67	1,946	2,436	0	0	4,382	37.78
MIL AA	<03182 4600 > Fish Screen Walls Formwork blt plywood	16900	SF	ACARC2	2,704	93,457	0	32,023	0	125,480	7.42
MIL AA	<03217 0750 > Fish Screen Walls Reinforcing Steel	143.00	TON	SIWRRODM4	1,144	50,382	0	81,859	0	132,241	924.76
RSM AA	<03326 0300 > Fish Screen Walls Material	715.00	CY	N/A	0	0	0	53,453	0	53,453	74.76
L MIL AA	<03372 5100 > Fish Screen Walls Placement	715.00	CY		416	11,998	15,015	0	0	27,013	37.78

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
MIL AA <03182 4600 > Tailwater Retaining Walls Formwork blt plywood	5600.00	SF	ACARC2	896	30,968	0	10,611	0	41,579	7.42
MIL AA <03217 0750 > Tailwater Retaining Walls Reinforcing Steel	41.00	TON	SIWRRODM4	328	14,445	0	23,470	0	37,915	924.76
RSM AA <03326 0300 > Tailwater Retaining Walls Material	207.00	CY	N/A	0	0	0	15,475	0	15,475	74.76
L MIL AA <03372 5100 > Tailwater Retaining Walls Placement	207.00	CY		120	3,473	4,347	0	0	7,820	37.78
MIL AA <05150 8230 > Fish Screen Structural Steel 45'	9.00	TON	SIWSB21	21	896	209	11,766	0	12,871	1430.09
MIL AA <05523 0530 > Handrail	380.00	LF	SIWSB4	76	3,564	95	4,655	0	8,315	21.88
MIL AA <05511 1500 > Stairs	27.00	SF	SIWSB4	5	253	7	617	0	877	32.50
MIL AA <05150 8230 > Fish Screen Structural Steel 45'	9.00	TON	SIWSB21	21	896	209	11,766	0	12,871	1430.09
MIL AA <05542 0618 > Walkway Grating	200.00	SF	SIWSB4	15	706	18	1,370	0	2,094	10.47
MIL AA <05542 0622 > Diffuser Grating	170.00	SF	SIWSB4	9	425	12	1,420	0	1,857	10.92
USR AA <13900 0001 > 36" Dia Flush Gate w/actuator	1.00	EA		0	500	1,000	11,571	0	13,071	13070.63
USR AA <13900 0002 > MCC Breaker Bucket	5.00	EA		0	2,500	1,250	9,801	0	13,551	2710.20
USR AA <13900 0003 > 48" Wide 3 Leave Telescoping Gate	1.00	EA		0	1,000	2,500	37,244	0	40,744	40743.80
USR AA <13900 0004 > 36" x 36" AWS Supply Gate with Motorized Acuator	3.00	EA		0	1,500	3,000	34,712	0	39,212	13070.63
USR AA <13900 0002 > MCC Breaker Bucket	1.00	EA		0	500	250	1,960	0	2,710	2710.20
USR AA <13900 0005 > 36" Dia Sch 10 Coated Steel (AWS Pipe)	20.00	LF		0	200	500	1,851	0	2,551	127.57
MIL AA <15172 2160 > 12" Dia Steel Pipe	5.00	LF	MPLUQ2	3	133	0	184	0	317	63.38
USR AA <13900 0024 > 8" Dia Ramp Gate w/handwheel	1.00	EA		0	500	250	3,153	0	3,903	3902.66
USR AA <13900 0022 > 12" Dia Flush Gate w/handwheel	1.00	EA		0	500	250	3,370	0	4,120	4120.46
MIL AA <15172 2140 > 8" dia, Steel Pipe	35.00	LF	MPLUQ2	18	678	0	645	0	1,322	37.77
USR AA <13900 0026 > 24" x 24" Pool Gate with Handwheel	2.00	EA		0	1,000	500	6,490	0	7,990	3995.22
USR AA <15286 4640 > Vertical Turbine Pump 75 Hp	1.00	EA	MPLUQ2	16	620	250	33,759	0	34,629	34628.68
MIL AA <16017 5080 > Conduit, to 15' h, 2.5" dia, incl 2 termn, 2 eib&11 bm clp per 100',	180.00	LF	BELEBELEC1	16	643	0	353	0	995	5.53
AF AA <15172 4920 > 6" Steel Sediment Control Piping	240.00	LF	MPLUQ2	113	4,375	0	5,653	0	10,028	41.79
AF AA <15172 4900 > 4" Steel Sediment Pipe	350.00	LF	MPLUQ1	92	3,458	0	2,489	0	5,947	16.99
MIL AA <15174 5916 > 4" x 8" Tube Steel Manifolds	19.00	EA	MPLUQ2	57	2,208	0	3,095	0	5,303	279.08
USR AA <13900 0002 > MCC Breaker Bucket	1.00	EA		0	500	250	1,960	0	2,710	2710.20
RSM AA <16017 1750 > 1" GRC 4x12 Gauge Wiring	510.00	LF	BELEBELEC1	45	1,821	0	878	0	2,698	5.29
MIL AA <16018 0540 > 1" GRC 6x12 Gauge Wiring	260.00	LF	BELEBELEC1	22	900	0	578	0	1,477	5.68
M RSM AA <15194 1110 > 4" Butterfly Valves w/motorized actuators	19.00	EA	MPLUQ2	152	5,887	0	33,106	0	38,993	2052.24
USR AA <13900 0028 > Fish Screen Panels and Backing Support	1.00	EA		0	9,000	2,500	37,026	0	48,526	48526.00
USR AA <13900 0030 > Fish Screen Adjustabel Baffles	1.00	EA		0	9,000	2,500	34,848	0	46,348	46348.00
USR AA <13900 0032 > Fish Screen Blank Panels	1.00	EA		0	4,500	1,500	9,801	0	15,801	15801.00
USR AA <13900 0034 > Fish Screen Cleaner	1.00	EA		0	12,000	3,000	87,120	0	102,120	102120.00
USR AA <13900 0036 > Fish Screen Cleaner Local Control Panel	1.00	EA		0	6,000	1,000	27,225	0	34,225	34225.00
MIL AA <16018 0540 > 1" GRC 6x12 Gauge Wiring	220.00	LF	BELEBELEC1	19	761	0	489	0	1,250	5.68

		QUANTY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MAIL	OTHER	TOTAL COST	UNIT COST
USR AA	<13900 0038 > MCC VFD	1.00	EA		0	1,000	250	8,712	0	9,962	9962.00
USR AA	<13900 0040 > SS Bypass Ramp Gate w/Hydraulic Actuator	1.00	EA		0	5,000	2,500	76,230	0	83,730	83730.00
USR AA	<13900 0042 > Hydraulic Local Control Panel	1.00	EA		0	2,500	250	21,780	0	24,530	24530.00
USR AA	<13900 0044 > SS Fish Braille	1.00	EA		0	3,840	1,500	20,473	0	25,813	25813.20
USR AA	<13900 0046 > SS V-Traps at Holding and Loading Pools	1.00	EA		0	1,280	1,500	15,682	0	18,462	18461.60
USR AA	<13900 0048 > 5 hp Braille Hoist	1.00	EA		0	250	500	2,178	0	2,928	2928.00
USR AA	<13900 0050 > 10 hp Braille Hoist	1.00	EA		0	250	500	3,267	0	4,017	4017.00
USR AA	<13900 0051 > Sediment Suction	1.00	EA		0	250	500	16,335	0	17,085	17085.00
USR AA	<13900 0002 > MCC Breaker Bucket	2.00	EA		0	1,000	500	3,920	0	5,420	2710.20
TOTAL Fish Screen & Fish Trap Improvem					8,225	370,655	62,465	904,871	0	1,337,990	
09. Fish Screen Intake											
MIL AA	<02232 0140 > Excavation	300.00	CY	CODEB12C	5	156	144	0	0	300	1.00
MIL AA	<02234 2200 > Onsite hauling and stockpile material	300.00	CY	CTDHB34F	3	87	156	0	0	243	0.81
AF AA	<02240 0030 > Backfill from stockpiled material	3720.00	CY	CODTB10B	45	1,451	1,674	0	0	3,125	0.84
RSM AA	<02240 0020 > Structural Backfill w/dozer	80.00	CY	CODTB15	2	56	72	436	0	564	7.05
MIL AA	<02244 0100 > 5/8" Crushed Rock Surfacing	14.00	SY	COFGB36C	0	4	4	61	0	69	4.93
MIL AA	<03182 4600 > Intake Retaining Walls Formwork blt plywood	8900.00	SF	ACARC2	1,424	49,217	0	16,864	0	66,081	7.42
MIL AA	<03217 0750 > Intake Retaining Walls Reinforcing Steel	66.00	TON	SIWRR0D4	528	23,253	0	37,781	0	61,034	924.76
RSM AA	<03326 0300 > Intake Retaining Walls Material	330.00	CY	N/A	0	0	0	24,671	0	24,671	74.76
L MIL AA	<03372 5100 > Intake Retaining Walls Placement	330.00	CY		192	5,537	6,930	0	0	12,467	37.78
MIL AA	<03182 4600 > Intake Guide Walls Formwork blt plywood	770.00	SF	ACARC2	123	4,258	0	1,459	0	5,717	7.42
MIL AA	<03217 0750 > Intake Guide Walls Reinforcing Steel	4.20	TON	SIWRR0D4	34	1,480	0	2,404	0	3,884	924.76
RSM AA	<03326 0300 > Intake Guide Walls Material	21.00	CY	N/A	0	0	0	1,570	0	1,570	74.76
L MIL AA	<03372 5100 > Intake Walls Placement	21.00	CY		12	352	441	0	0	793	37.78
MIL AA	<03182 4600 > Intake Access Retaining Walls Formwork blt plywood	1300.00	SF	ACARC2	208	7,189	0	2,463	0	9,652	7.42
MIL AA	<03217 0750 > Intake Access Retaining Walls Reinforcing Steel	9.00	TON	SIWRR0D4	72	3,171	0	5,152	0	8,323	924.76
RSM AA	<03326 0300 > Intake Access Retaining Walls Material	47.00	CY	N/A	0	0	0	3,514	0	3,514	74.76
L MIL AA	<03372 5100 > Intake Access Retaining Walls Placement	47.00	CY		27	789	987	0	0	1,776	37.78
AF AA	<03150 7100 > Elevated Deck Slab Formwork	1140.00	SF	ACARC1	114	3,830	0	571	0	4,401	3.86
MIL AA	<03217 0600 > Elevated Deck Slab Reinforcing Steel	17.00	TON	SIWRR0D4	237	10,416	0	9,732	0	20,148	1185.17
RSM AA	<03326 0300 > Elevated DecksSlab Material	56.00	CY	N/A	0	0	0	4,187	0	4,187	74.76
MIL AA	<03372 1500 > Elevated Deck Slab Placement	56.00	CY	CLABC20	22	646	208	0	0	854	15.25

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 PROJECT MM1FPB: White River Barrier - Federally Preferred Alternative
 White River Diversion Dam
 09. Fish Screen Intake

	QUANTY	UOM	CREW	ID	MANHRS	LABOR	EQUIP	MAINT	OTHER	TOTAL	COST	UNIT	COST
MIL AA <03182 4600 > Flume Walls Formwork bt plywood	900.00	SF	ACARC2		144	4,977	0	1,705	0	6,682	7.42		
MIL AA <03217 0750 > Flume Walls Reinforcing Steel	7.00	TON	SIWRRODM4		56	2,466	0	4,007	0	6,473	924.76		
RSM AA <03326 0300 > Flume Walls Material	33.00	CY	N/A		0	0	0	2,467	0	2,467	74.76		
L MIL AA <03372 5100 > Flume Walls Placement	33.00	CY			19	554	693	0	0	1,247	37.78		
MIL AA <05150 8230 > Grating Support Steel 45'	1.00	TON	SIWSE21		2	100	23	1,307	0	1,430	1430.09		
MIL AA <05523 0530 > Handrail	180.00	LF	SIWSE4		36	1,688	45	2,205	0	3,939	21.88		
MIL AA <05511 1500 > Ladders	15.00	LF	SIWSE4		3	141	4	343	0	487	32.50		
MIL AA <05542 0618 > Walkway Grating	73.00	SF	SIWSE4		5	258	7	500	0	764	10.47		
USR AA <13900 0007 > Stoplog Slot Guides - Intake	2600.00	LB			0	1,950	1,430	3,539	0	6,919	2.66		
USR AA <13900 0008 > Steel Stoplogs - Intake	10240	LB			0	7,680	5,632	13,939	0	27,251	2.66		
TOTAL Fish Screen Intake					3,314	131,706	18,449	140,878	0	291,034			
MIL AA <02833 4760 > Fence gates wir	6.00	EA	CLABB80B		32	918	393	2,761	0	4,072	678.66		
MIL AA <02833 4630 > Fence, 7' high	800.00	LF	USKCSKWK3		40	1,504	0	24,820	0	26,324	32.91		
MIL AA <02932 0320 > Hydroseeding	2.00	ACR	COELB66		9	286	135	1,197	0	1,618	809.17		
TOTAL Incidentals					81	2,709	528	28,778	0	32,015			
MIL AA <03170 3060 > Slab on Grade Formwork	210.00	SF	ACARC1		19	645	0	178	0	823	3.92		
MIL AA <03217 0600 > Slab on Grade Reinforcing Steel	5.00	TON	SIWRRODM4		70	3,064	0	2,862	0	5,926	1185.17		
RSM AA <03326 0300 > Slab on Grade Material	50.00	CY	N/A		0	0	0	3,738	0	3,738	74.76		
MIL AA <03372 4650 > Slab on Grade Placement	50.00	CY	CLABC20		17	499	161	0	0	660	13.19		
MIL AA <04235 6100 > CMU Block Wall scf/reinf	1800.00	SF	AMABD8		206	6,894	0	4,293	0	11,187	6.21		
B MIL AA <05155 3100 > Roof Truss (20' Span)	29.00	EA			1,160	1,740	1,740	3,158	0	6,638	228.90		
MIL AA <09263 2000 > Gypsum Board Ceiling	1000.00	SF	ACARCARP2		8	290	0	316	0	606	0.61		
MIL AA <07417 0970 > Metal Roofing fasteners incl	1400.00	SF	ALABG3		50	1,680	0	1,936	0	3,616	2.58		
B MIL AA <08109 0640 > 3 x 7 Hollow Metal Door	5.00	EA	ACARCARP2		30	1,075	0	6,534	0	7,609	1521.76		
B MIL AA <08361 2700 > 8 x 10 Roll-up Door sectional	1.00	EA	ACARCARP2		16	573	0	2,614	0	3,187	3186.88		
B MIL AA <10824 0100 > Bathroom accessories	1.00	EA	ACARCARP1		70	2,500	0	5,445	0	7,945	7945.00		
MIL AA <08624 0410 > Windows w/fr/scr/ext trim	2.00	EA	ACARCARP1		2	64	0	595	0	658	329.15		
MIL AA <11601 6250 > Tables and Chairs	10.00	LF	N/A		0	0	0	3,082	0	3,082	308.17		
MIL AA <15708 2344 > HVAC System	1.00	EA	MSPFQ6		34	1,346	0	9,402	0	10,748	10747.66		
B MIL AA <11226 0100 > Sewage Grinder Station	1.00	EA	MPLUQ2		60	2,324	0	15,246	0	17,570	17570.00		
B MIL AA <16711 0300 > General Electrical Installation	1.00	EA	EELER19		62	2,500	0	5,445	0	7,945	7945.00		
MIL AA <10505 0500 > Lockers	4.00	EA	MSHMSHEEL		4	163	0	913	0	1,076	269.05		
TOTAL Buildings					1,807	25,356	1,901	65,757	0	93,013			

		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
12. Specialized Equipment											
USR AA	<16515 0012 >	Electrical Service & MMC Service Entrance	1.00	LS	0	5,000	1,000	18,513	0	24,513	24513.00
USR AA	<16515 0014 >	General Motor Control Center	1.00	LS	0	4,000	0	11,979	1,600	17,579	17579.00
USR AA	<16515 0016 >	Grounding System	1.00	LS	0	1,600	0	1,634	300	3,534	3533.50
USR AA	<16515 0018 >	Generator Receptacle	1.00	LS	0	1,600	0	1,960	300	3,860	3860.20
USR AA	<16515 0020 >	Portable Welder Receptacle	1.00	LS	0	1,600	0	1,960	300	3,860	3860.20
USR AA	<16515 0022 >	Portable Sump Pump and Receptacle	1.00	LS	0	1,600	0	3,812	300	5,712	5711.50
USR AA	<11264 0016 >	30-hp Hydraulic Power System	1.00	LS	0	5,000	2,500	32,670	0	40,170	40170.00
USR AA	<11264 0018 >	Debris Handler	1.00	LS	0	5,000	3,500	239,580	0	248,080	248080.00
USR AA	<16264 0020 >	Scada Control Panel	1.00	LS	120	7,200	0	98,010	0	105,210	105210.00
USR AA	<16227 0022 >	HMI Computer and Software	1.00	EA	0	0	0	19,602	0	19,602	19602.00
USR AA	<16264 0022 >	Scada Programming Software	1.00	LS	0	80,000	0	0	0	80,000	80000.00
USR AA	<16264 0024 >	Communications Panel	1.00	LS	0	0	0	32,670	0	32,670	32670.00
USR AA	<11264 0026 >	Level Transmitters Equipment	6.00	EA	0	0	0	15,682	0	15,682	2613.60
USR AA	<11264 0026 >	Level Transmitters Install	6.00	EA	0	3,600	1,500	0	0	5,100	850.00
USR AA	<13900 0052 >	Hydraulic Controls and Master Panel	1.00	EA	0	8,000	1,500	87,120	0	96,620	96620.00
TOTAL Specialized Equipment					120	124,200	10,000	565,191	2,800	702,191	

13. Maintenance Deck												
L MIL AA	<03138 4000 >	Forms in place, vert, 36" high, plywood, 1 use, beam sides only	250.00	SF	ACARC2	50	1,674	0	958	0	2,632	10.53
L MIL AA	<03330 3670 >	Concrete in place,pump,750psi, incl flexural on grade	54.00	CY	ULABC8	76	2,191	722	3,548	0	6,461	119.64
L MIL AA	<03334 0100 >	Curing, burlap, 4 uses assumed, 12 oz	0.50	CSF	ALABCLAB2	1	26	0	3	0	29	58.64
L MIL AA	<03217 0700 >	Reinforcing in place, walls, #3 to #7	6.00	TON	SIWRRODM4	80	3,295	0	3,352	0	6,647	1107.90
L MIL AA	<03182 2008 >	Forms in place, walls, int, to 8' high, 1 use, job built plywood	500.00	SF	ACARC2	100	3,348	0	1,035	0	4,382	8.76
CIV AA	<02384 4600 >	Caisson, open, for mobilization, 50 mile radius, rig to 36" Figure mob is required for work in 2 sections, right bank and left bank.	2.00	EA	CLADB43	48	1,338	211	0	0	1,549	774.62
MIL AA	<02384 0300 >	Caisson, 30"dia, 0.182 CY/LF, to 50'D, no casings/gndwtr, open, mach dr. 35 foot drilled cast-in-place reinforced concrete piles. 8 each.	280.00	VLF	CLADB43	90	2,498	394	4,309	0	7,200	25.72
L MIL AA	<03330 3670 >	Concrete in place,pump,750psi, incl flexural on grade Reinforced Concrete 6 cy pile caps, 4 each.	92.00	CY	ULABC8	129	3,733	1,230	6,044	0	11,007	119.64

B. Bridge Piers on Bank		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
L MIL AA	<03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	1.00	CSF	ALABCLAB2	2	52	0	6	0	59	58.64
L MIL AA	<03217 0700 > Reinforcing in place, walls, #3 to #7	9.00	TON	SIWRRODM4	120	4,943	0	5,028	0	9,971	1107.90
L MIL AA	<03330 3670 > Concrete in place,pump,750psi, incl flexural on grade	180.00	CY	ULABC8	252	7,303	2,407	11,826	0	21,536	119.64
L MIL AA	<03334 0100 > Curing, burlap, 4 uses assumed, Figure 30 cy each, and 6 piers, total of 180 cy.	5.80	CSF	ALABCLAB2	12	304	0	36	0	340	58.64
L MIL AA	<03182 2008 > Forms in place, walls, int, to 8' high, 1 use, job built plywood	5800.00	SF	ACARC2	1,160	38,836	0	12,001	0	50,836	8.76
L MIL AA	<03217 0700 > Reinforcing in place, walls, #3 to #7	18.00	TON	SIWRRODM4	240	9,886	0	10,056	0	19,942	1107.90
L MIL AA	<03330 3670 > Concrete Girders from Tacoma, Concrete Tech	2600.00	LF	ULABC8	2,427	70,325	23,178	170,818	0	264,322	101.66
L MIL AA	<03330 3670 > Crane for Girder Placement	40.00	EA	CPIDB19	640	23,085	12,253	2,628	0	37,966	949.16
L MIL AA	<03330 3670 > Concrete in place,pump,750psi, incl flexural on grade	50.00	CY	ULABC8	70	2,029	669	3,285	0	5,982	119.64
L MIL AA	<03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	0.80	CSF	ALABCLAB2	2	42	0	5	0	47	58.64
L MIL AA	<03182 2008 > Forms in place, walls, int, to 8' high, 1 use, job built plywood	500.00	SF	ACARC2	100	3,348	0	1,035	0	4,382	8.76
L MIL AA	<03217 0700 > Reinforcing in place, walls, #3 to #7	5.00	TON	SIWRRODM4	67	2,746	0	2,793	0	5,540	1107.90
L MIL AA	<03227 0400 > Welded wire fabric, 6 x 6 - W4 x W4 (4 x 4) 58 lb/CSF, sheets	11700	SF	SIWRRODM2	78	3,213	0	2,803	0	6,016	0.51
L MIL AA	<03330 3670 > Concrete in place,pump,750psi, incl flexural on grade	217.00	CY	ULABC8	304	8,804	2,902	14,257	0	25,963	119.64
L CIV AA	<03150 1000 > Forms in place, elev slab, flat plate plywd to 15' high, 1 use	11700	SF	ACARC2	1,755	58,756	0	33,255	0	92,011	7.86
L MIL AA	<03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	117.00	CSF	ALABCLAB2	234	6,138	0	722	0	6,861	58.64
L MIL AA	<02835 7272 > Fence, CL, 6' high, dbl, 18"W, incl, gates, swing, galv, w/o barb wire	2.00	EA	CLABB80B	8	223	98	730	0	1,051	525.49
L CIV AA	<02840 2000 > Guide/guard rail, 2' wide, 3'-6" H, sgl, cast in pl conc, median barrier	1300.00	LF	COFGB29	228	6,416	1,060	40,602	0	48,078	36.98
L MIL AA	<03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	9.10	CSF	ALABCLAB2	18	477	0	56	0	534	58.64
L MIL AA	<03217 0700 > Reinforcing in place, walls, #3 to #7	9.00	TON	SIWRRODM4	120	4,943	0	5,028	0	9,971	1107.90
MIL AA	<02243 0010 > Base, prepare & roll sub-base, small areas to 2500 SY	180.00	SY	COFGB32A	3	91	69	0	0	160	0.89

G. Approaches, Earthwork		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
M AF AA	<02234 0555 > Hauling, hwy haulers, 12 CY, 12 mile round trip @ base wide rate	90.00	CY	COEIR34B	5	119	177	1,470	0	1,766	19.62
MIL AA	<02215 2360 > Backfill, spread dumped gravel/fill, dozer, 6" layers, no compaction	540.00	SY	CODTB10B	2	57	67	0	0	124	0.23
MIL AA	<02244 0100 > Base course, compacted to 6" deep, crushed 3/4" stone, large areas	180.00	SY	COFGB36C	1	45	50	790	0	885	4.92
CIV AA	<02840 2000 > Guide/guard rail, 2' wide, 3'-6" H, sgl, precast conc, median barrier	80.00	LF	COFGB29	12	333	55	2,499	0	2,886	36.08
L MIL AA	<03217 0700 > Reinforcing in place, walls, #3 to #7	7.00	TON	SIWRRODM4	93	3,845	0	3,911	0	7,755	1107.90
L MIL AA	<03182 2008 > Forms in place, walls, int, to 8' high, 1 use, job built plywood	1100.00	SF	ACARC2	220	7,365	0	2,276	0	9,641	8.76
AF AA	<02109 0365 > Clear & grub, grub & stack, 200 HP dozer	300.00	CY	CODTB10B	6	175	206	0	0	381	1.27
MIL AA	<06178 0010 > Framing, heavy, mill timber, beams, single 6" x 10"	8000.00	BF	ACARCARP2	116	4,041	0	15,856	0	19,897	2.49
MIL AA	<02216 5510 > Backfill, strl, 6" lifts, by machine, no compaction, around foundation	100.00	CY	CODEB12A	2	54	34	0	0	88	0.88
MIL AA	<02239 0200 > Spread & compact, slope up to 1 in 4, shape embankment, w/ machine	336.00	SY	COFGB32A	7	212	161	0	0	373	1.11
MIL AA	<02244 0100 > Base course, compacted to 6" deep, crushed 3/4" stone, large areas	336.00	SY	COFGB36C	3	84	94	1,475	0	1,653	4.92
AF AA	<02109 0365 > Clear & grub, grub & stack, 200 HP dozer	217.00	CY	CODTB10B	4	127	149	0	0	275	1.27
RSM AA	<02220 5000 > Compaction, riding, vibrating roller, 6" lifts, 2 passes	100.00	CY	COFCB10Y	0	13	6	0	0	19	0.19
L MIL AA	<03330 3610 > Concrete in place, dir chute, 4.5 MPa, incl flexural on grade	71.00	CY	ULABC8A	85	2,394	0	4,597	0	6,992	98.47
MIL AA	<03132 2050 > Expansion joint, premolded, bituminous fiber, 1" x 12"	55.00	LF	ACARCARP1	1	51	0	95	0	146	2.65
L MIL AA	<03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	1.10	CSF	ALABCLAB2	2	58	0	7	0	65	58.64
TOTAL Maintenance Deck											
					8,970	289,035	46,193	369,193	0	704,421	704421.41
14. 35' Radial Gate											
MIL AA	<02232 0140 > Excavation	2800.00	CY	CODEB12C	43	1,456	1,344	0	0	2,800	1.00
MIL AA	<02234 2200 > Onsite hauling and stockpile material	2800.00	CY	CTDHF34F	29	812	1,456	0	0	2,268	0.81
AF AA	<02240 0030 > Backfill from stockpiled material	80.00	CY	CODTB10B	1	31	36	0	0	67	0.84

QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST	
RSM AA <02240 0020 >	Structural Backfill w/dozer	20.00 CY	CODTB15	0	14	18	109	0	141	7.05
AF AA <03150 7100 >	Foundation Transition Formwork	480.00 SF	ACARC1	48	1,613	0	240	0	1,853	3.86
MIL AA <03217 0600 >	Foundation Transition Steel	32.00 TON	SIWRRODM4	445	19,607	0	18,318	0	37,926	1185.17
RSM AA <03326 0300 >	Foundation Transition Material	325.00 CY	N/A	0	0	0	24,297	0	24,297	74.76
L MIL AA <03372 1500 >	Foundation Placement	325.00 CY		130	3,751	0	0	0	10,576	32.54
AF AA <03150 7100 >	Right Pier Formwork	2900.00 SF	ACARC1	290	9,744	0	1,453	0	11,197	3.86
MIL AA <03217 0600 >	Right Pier Steel	49.00 TON	SIWRRODM4	682	30,024	0	28,050	0	58,074	1185.17
RSM AA <03326 0300 >	Right Pier Material	163.00 CY	N/A	0	0	0	12,186	0	12,186	74.76
L MIL AA <03372 1500 >	Right Pier Placement	163.00 CY		65	1,881	0	0	0	5,304	32.54
MIL AA <03170 3060 >	Slab on Grade Formwork	680.00 SF	ACARC1	62	2,088	0	578	0	2,665	3.92
MIL AA <03217 0600 >	Slab on Grade Reinforcing Steel	56.00 TON	SIWRRODM4	779	34,313	0	32,057	0	66,370	1185.17
RSM AA <03326 0300 >	Slab on Grade Material	556.00 CY	N/A	0	0	0	41,566	0	41,566	74.76
L MIL AA <03372 4650 >	Slab on Grade Placement	556.00 CY		192	5,549	0	0	0	17,225	30.98
MIL AA <03182 4600 >	Cutoff Walls Formwork blt plywood	480.00 SF	ACARC2	77	2,654	0	910	0	3,564	7.42
MIL AA <03217 0750 >	Cutoff Walls Reinforcing Steel	5.40 TON	SIWRRODM4	43	1,903	0	3,091	0	4,994	924.76
RSM AA <03326 0300 >	Cutoff Walls Material	27.00 CY	N/A	0	0	0	2,019	0	2,019	74.76
L MIL AA <03372 5100 >	Cutoff Walls Placement	27.00 CY		16	453	0	0	0	1,020	37.78
AF AA <03150 7100 >	Elevated Slab Formwork	960.00 SF	ACARC1	96	3,226	0	481	0	3,707	3.86
MIL AA <03217 0600 >	Elevated Slab Reinforcing Steel	7.20 TON	SIWRRODM4	100	4,412	0	4,122	0	8,533	1185.17
RSM AA <03326 0300 >	Elevated Slab Material	24.00 CY	N/A	0	0	0	1,794	0	1,794	74.76
L MIL AA <03372 1500 >	Elevated Slab Placement	24.00 CY		10	277	0	0	0	781	32.54
MIL AA <03170 3060 >	Upstream Apron Slab Formwork	540.00 SF	ACARC1	49	1,658	0	459	0	2,116	3.92
MIL AA <03217 0600 >	Upstream Apron Slab Reinforcing Steel	29.00 TON	SIWRRODM4	403	17,769	0	16,601	0	34,370	1185.17
RSM AA <03326 0300 >	Upstream Apron Slab Material	287.00 CY	N/A	0	0	0	21,456	0	21,456	74.76
L MIL AA <03372 4650 >	Upstream Apron Slab Placement	287.00 CY		99	2,864	0	0	0	8,891	30.98
MIL AA <03182 4600 >	Divider Walls Formwork blt plywood	3400.00 SF	ACARC2	544	18,802	0	6,443	0	25,245	7.42
MIL AA <03217 0750 >	Divider Walls Reinforcing Steel	39.00 TON	SIWRRODM4	312	13,740	0	22,325	0	36,066	924.76
RSM AA <03326 0300 >	Divider Walls Material	193.00 CY	N/A	0	0	0	14,429	0	14,429	74.76
L MIL AA <03372 5100 >	Divider Walls Placement	193.00 CY		112	3,239	0	0	0	7,292	37.78
MIL AA <05523 0530 >	Handrail	112.00 LF	SIWSE4	22	1,051	28	1,372	0	2,451	21.88
MIL AA <05150 8230 >	Walkway Structural Steel 45'	10.00 TON	SIWSE21	23	995	232	13,073	0	14,301	1430.09
MIL AA <05542 0618 >	Walkway Grating	680.00 SF	SIWSE4	51	2,400	61	4,658	0	7,119	10.47
USR AA <13900 0007 >	Stoplog Slot Guides	3200.00 LB		0	2,400	1,760	4,356	0	8,516	2.66
USR AA <13900 0008 >	Steel Stoplogs	21600 LB		0	16,200	11,880	29,403	0	57,483	2.66
USR AA <13900 0014 >	35' Radial Gate and Hydraulic Actuator	1.00 EA		0	0	0	227,601	0	227,601	227601.00
USR AA <13900 0015 >	35' Radial Gate pistons with transmitters and local control	1.00 EA		0	0	0	41,562	0	41,562	41561.69
RSM AA <16017 1750 >	1" GRC 4x12 Gauge Wiring	120.00 LF	EELELEEC1	11	428	0	206	0	635	5.29
MIL AA <16018 0540 >	3/4" GRC 6x12 Gauge Wiring	260.00 LF	EELELEEC1	22	900	0	578	0	1,477	5.68
USR AA <13900 0002 >	MCC Breaker Bucket	3.00 EA		0	1,500	750	5,881	0	8,131	2710.20
USR AA <13900 0016 >	Gate Installation and Startup	1.00 EA		0	64,000	5,000	2,723	0	71,723	71722.50
MIL AA <15162 3014 >	Pipe sst sched 40, 1", type 304, threaded, cplg 10' OC, no hangers	120.00 LF	MPLUPLUM1	20	817	0	1,313	0	2,131	17.75
B MIL AA <05314 6100 >	1/2" Steel Armorary Plate with Studs	6820.00 SF		682	40,920	13,640	145,569	0	200,129	29.34

Trl-Service Automated Cost Engineering System (TRACES)
 PROJECT MW1FPB: White River Barrier - Federally Preferred Alternative
 White River Diversion Dam
 14. 35' Radial Gate

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
TOTAL 35' Radial Gate	5,461			313,490	69,281	731,276	0	1,114,047		
TOTAL White River Barrier	65,615			2,620,059	587,263	4,319,913	297,588	7,824,823		

*****TOTAL PROJECT COST SUMMARY*****

THIS ESTIMATE IS BASED ON THE SCOPE OF WORK FOR THE SECTION 205 REPORT

DISTRICT: SEATTLE

P.O.C.: TIM SULLIVAN, LEAD, COST ENGINEERING SECTION

PROJECT: MMD FISH PASSAGE
 LOCATION: White River, Washington

FULLY FUNDED ESTIMATE

CURRENT MCACES ESTIMATE PREPARED: 02 Jul 03

AUTHORIZE./BUDGET YEAR: 2003

EFFECTIVE PRICING LEVEL: Oct-02

EFFECT. PRICING LEVEL: 1 OCT 02

ACCOUNT NUMBER	FEATURE DESCRIPTION	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	TOTAL (\$K)	SPENT FY (\$K)	FEATURE MID PT (%)	OMB COST (\$K)	CNTG (\$K)	FULL (\$K)	
LOCALLY PREFERRED ALTERNATIVE												
06	FISH AND WILDLIFE FACILITIES	11,759	1,764	0.0%	13,523	13,523		Jul-08	6.3%	12,500	1,875	14,375
TOTAL CONSTRUCTION COSTS		11,759	1,764		13,523	13,523				12,500	1,875	14,375
01	LANDS AND DAMAGES	663	99	0.0%	762	762		Jul-06	1.3%	672	101	772
20---	PERMANENT MAINTENANCE EQUIPMENT	149	22	15%	171	171		Jul-08	8.4%	162	24	186
30---	PLANNING, ENGINEERING AND DESIGN	2,700	405	15%	3,105	3,105		Apr-04	1.3%	2,735	410	3,145
31---	CONSTRUCTION MANAGEMENT	1,282	128	10%	1,410	1,410		Jul-08	8.4%	1,389	139	1,528
TOTAL PROJECT COSTS		16,553	2,419		18,972	18,972				17,457	2,549	20,007

DISTRICT APPROVED:

Tim Sullivan
 CHIEF, COST ENGINEERING SECTION

CHIEF, CIVIL PROGRAMS UNIT

PROJECT MANAGER

CHIEF, REAL ESTATE DIVISION

DIVISION APPROVED:

CHIEF, COST ENGINEERING

DIRECTOR, REAL ESTATE

CHIEF, PROGRAMS MANAGEMENT

DIRECTOR OF PPMD

APPROVED DATE: _____

TOTAL FEDERAL COSTS \$ -

TOTAL NON-FEDERAL COSTS \$ -

THE MAXIMUM PROJECT COST IS \$ -

****TOTAL CONTRACT COST SUMMARY****

THIS ESTIMATE IS BASED ON THE SCOPE OF WORK FOR THE SECTION 205 REPORT

PROJECT: MMD FISH PASSAGE DISTRICT: SEATTLE 17-Dec-04
 LOCATION: White River, Washington P.O.C.: TIM SULLIVAN, LEAD, COST ENGINEERING SECTION

CURRENT MCACES ESTIMATE PREPARED: AUTHORIZ./BUDGET YEAR: 2003 FULLY FUNDED ESTIMATE
 EFFECTIVE PRICING LEVEL: Oct-02 EFFECT. PRICING LEVEL: 1 OCT 02

ACCOUNT NUMBER	FEATURE DESCRIPTION	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	SPENT FY (\$K)	FEATURE MID PT	OMB (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
LOCALLY PREFERRED ALTERNATIVE														
FISH AND WILDLIFE FACILITIES														
06	Temporary Construction	713	107	15%	820	713	107	820		Jul-08	6.3%	758	114	872
	Demolition	829	124	15%	953	829	124	953		Jul-08	6.3%	881	132	1,013
	Earthworks	294	44	15%	338	294	44	338		Jul-08	6.3%	313	47	359
	Right Bank Fishway Entrance	191	29	15%	220	191	29	220		Jul-08	6.3%	203	30	233
	Fixed Crest Weir	643	96	15%	739	643	96	739		Jul-08	6.3%	684	103	786
	Rubber Weirs	1,929	289	15%	2,218	1,929	289	2,218		Jul-08	6.3%	2,051	308	2,358
	35' Radial Gate	1,391	209	15%	1,600	1,391	209	1,600		Jul-08	6.3%	1,479	222	1,700
	16' Radial Gate	761	114	15%	875	761	114	875		Jul-08	6.3%	809	121	930
	Fish Screen & Fish Trap Improvements	1,670	251	15%	1,921	1,670	251	1,921		Jul-08	6.3%	1,775	266	2,041
	Diversion Intake	1,393	209	15%	1,602	1,393	209	1,602		Jul-08	6.3%	1,481	222	1,703
	Incidentals	40	6	15%	46	40	6	46		Jul-08	6.3%	43	6	49
	Buildings	116	17	15%	133	116	17	133		Jul-08	6.3%	123	18	142
	Specialized Equipment	910	137	15%	1,047	910	137	1,047		Jul-08	6.3%	967	145	1,112
	Maintenance Deck	879	132	15%	1,011	879	132	1,011		Jul-08	6.3%	934	140	1,075
	TOTAL CONSTRUCTION COSTS	11,759	1,764		13,523	11,759	1,764	13,523				12,500	1,875	14,375
01	LANDS AND DAMAGES Estimate was not developed for the Locally Preferred Plan. The line item amount shown is the estimate for the Federal Plan. The two plans are very similar.													
20---	Real Estate	663	99	15%	762	663	99	762		Jul-06	1.3%	672	101	772
30---	PERMANENT MAINTENANCE EQUIPMENT	149	22	15%	171	149	22	171		Jul-08	8.4%	162	24	186
	PLANNING, ENGINEERING AND DESIGN	2,700	405	15%	3,105	2,700	405	3,105		Apr-04	1.3%	2,735	410	3,145
	Project Management													
	Planning & Environmental Compliance													
	Engineering & Design													
	Engineering Tech Review & VE													
	Real Estate Planning													
	Engineering During Construction													
	Environmental Monitoring:													
31---	CONSTRUCTION MANAGEMENT	1,282	128	10%	1,410	1,282	128	1,410		Jul-08	8.4%	1,389	139	1,528
	Construction Management													
	Project Operation:													
	Project Management													
	TOTAL PROJECT COSTS	16,553	2,419		18,972	16,553	2,419	18,972				17,457	2,549	20,006

White River Barrier
Locally Preferred Alternative

Designed By: MONTGOMERY WATSON HARZA
Estimated By: RICHARD GALLAS

Prepared By: RICHARD GALLAS

Preparation Date: 09/25/03
Effective Date of Pricing: 09/25/03
Est Construction Time: 730 Days

Sales Tax: 8.9%

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** PROJECT INDIRECT SUMMARY - Scope (Rounded to 1000's) **

	QUANTITY	UOM	DIRECT	FOOH	HOOH	PROFIT	BOND	B&O Tax	TOTAL COST	UNIT COST
02			571,000	57,000	19,000	52,000	10,000	4,000	713,000	
03			664,000	66,000	22,000	60,000	12,000	4,000	829,000	
04			236,000	24,000	8,000	21,000	4,000	1,000	294,000	
05			153,000	15,000	5,000	14,000	3,000	1,000	191,000	
06			515,000	52,000	17,000	47,000	9,000	3,000	643,000	
07			1,546,000	155,000	51,000	140,000	28,000	10,000	1,929,000	
08			1,114,000	111,000	37,000	101,000	20,000	7,000	1,391,000	
09			610,000	61,000	20,000	55,000	11,000	4,000	761,000	
10			1,338,000	134,000	44,000	121,000	25,000	8,000	1,670,000	
11			1,116,000	112,000	37,000	101,000	20,000	7,000	1,393,000	
12			32,000	3,000	1,000	3,000	1,000	0	40,000	
13			93,000	9,000	3,000	8,000	2,000	1,000	116,000	
14			729,000	73,000	24,000	66,000	13,000	5,000	910,000	
15			704,000	70,000	23,000	64,000	13,000	4,000	879,000	
	1.00	JOB								
TOTAL		White River Barrier	9,421,000	942,000	311,000	854,000	173,000	59,000	11,759,000	

01. Bond & Insurance		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
** ADJUSTED **											
TOTAL Mobilization / General Condition											
02. Temporary Construction											
M	MIL AA	<02266	1120	> Filter Fencing polypropylene	50	1,364	0	2,396	0	3,760	3.42
RSM	AA	<02270	0100	> Detention Pond Rip Rap	5	174	92	410	0	676	33.79
MIL	AA	<02270	1120	> Detention Pond Washed Rock	3	74	34	392	0	500	24.99
CIV	AA	<02267	0200	> Detention Pond Filter Fabric	0	12	1	63	0	76	0.76
MIL	AA	<02667	5080	> Detention Pond 8" PVC Drainline	7	227	0	252	0	479	4.79
L	MIL AA	<02224	7110	> Detention Pond Excavation dozer	94	3,059	1,500	0	0	4,559	9.12
RSM	AA	<02240	0020	> Detention Pond Decommissioning/Backfill w/dozer	12	350	450	2,723	0	3,523	7.05
L	AF AA	<02110	0600	> Stripping of Plants & Trees	161	5,000	4,476	0	0	9,476	4737.93
MIL	AA	<02234	0545	> Hauling Debris cyc/hr)	19	541	759	0	0	1,300	2.50
CIV	AA	<02091	5010	> Disposal of Debris charge	0	0	0	0	35,532	35,532	68.33
CIV	AA	<02267	0200	> Membrane Lining Material & Placement	45	1,356	113	7,137	0	8,606	0.76
L	AF AA	<02240	0030	> Borrow Material Placement & Shaping	90	2,925	3,375	0	0	6,300	3.50
M	RSM AA	<02270	0100	> 3" - 12" Rip Rap Material Placement	49	1,651	878	0	0	2,529	13.31
B	RSM AA	<02270	0100	> 4" - 24" Rip Rap Material Placement	204	6,869	3,652	0	0	10,520	52.60
L	CIV AA	<02232	0160	> Cofferdam Removal	126	4,247	7,890	0	0	12,137	4.82
MIL	AA	<02270	1120	> 3" - 12" Rip Rap Material	24	703	319	3,726	0	4,749	24.99
MIL	AA	<02270	1140	> 4" - 24" Rip Rap Material	25	740	336	4,175	0	5,251	26.26
MIL	AA	<02270	1160	> 6" - 48" Rip Rap Material	41	1,221	554	7,579	0	9,355	28.35
M	RSM AA	<02270	0100	> 6" - 48" Rip Rap Placement	85	2,868	1,525	0	0	4,392	13.31
MIL	AA	<02232	0140	> Excavation of onsite borrow material	28	936	864	0	0	1,800	1.00
MIL	AA	<02234	2200	> Onsite hauling and stockpile material	19	522	936	0	0	1,458	0.81
CIV	AA	<02267	0200	> Membrane Lining Material & Placement	50	1,512	126	7,958	0	9,596	0.76
B	RSM AA	<02270	0100	> 4" - 24" Rip Rap Material Placement	204	6,869	3,652	0	0	10,520	52.60
L	CIV AA	<02232	0160	> Cofferdam Removal	134	4,517	8,391	0	0	12,908	4.82
MIL	AA	<02270	1140	> 4" - 24" Rip Rap Material	25	740	336	4,175	0	5,251	26.26
MIL	AA	<02270	1160	> 6" - 48" Rip Rap Material	75	2,220	1,008	13,780	0	17,008	28.35
M	RSM AA	<02270	0100	> 6" - 48" Rip Rap Placement	155	5,214	2,772	0	0	7,986	13.31
MIL	AA	<02232	0140	> Excavation of onsite borrow material	42	1,404	1,296	0	0	2,700	1.00
L	AF AA	<02240	0030	> Borrow Material Placement & Shaping	95	3,088	3,563	0	0	6,650	3.50
MIL	AA	<02234	2200	> Onsite hauling and stockpile material	20	551	988	0	0	1,539	0.81

06. De-Watering		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
B MIL AA <02140 2200 >	Dewatering System Maintenance and Operation	1.00	LS		0	25,000	5,000	0	5,000	35,000	35000.00
AFH AA <02086 5136 >	18" Dia x 50' Deep Well Installation	400.00	LF	CLADB23	1.481	40,356	9,948	0	0	50,304	125.76
MIL AA <15288 4040 >	8 - 50 GPM Dewatering Pumps unconsolidated	8.00	EA	MPLUQ1	75	2,836	0	17,002	0	19,838	2479.74
B MIL AA <15288 4040 >	8 - 140 GPM Seepage Control sgl stg	8.00	EA	MPLUQ1	128	4,821	0	39,788	0	44,608	5576.03
L AF AA <16513 6080 >	15 KVA Standby Power Generator sgl stg	9.00	MO	EELER19	279	11,250	0	13,421	0	24,671	2741.20
MIL AA <15155 2560 >	6" PVC Header Manifold Pipe	400.00	LF	MPLUQ1	75	2,836	0	1,921	0	4,757	11.89
MIL AA <15155 2510 >	2" PVC Header Manifold Pipe	400.00	LF	MPLUQ1	50	1,884	0	344	0	2,228	5.57
HTW AA <02086 6123 >	Well Abandonment	725.00	CF	ULABW8	870	26,194	6,163	28,526	0	60,882	83.98
MIL AA <15155 2540 >	4" PVC Header Manifold Pipe	320.00	LF	MPLUQ1	48	1,818	0	805	0	2,623	8.20
MIL AA <15155 2570 >	8" PVC Header Manifold Pipe	480.00	LF	MPLUQ2	118	4,550	0	3,513	0	8,063	16.80
MIL AA <02244 1510 >	Left Bank areas	740.00	CY	COFGB36C	68	2,198	2,375	19,550	0	24,123	32.60
MIL AA <02244 1510 >	Right Bank areas	330.00	CY	COFGB36C	30	980	1,059	8,718	0	10,758	32.60
B MIL AA <02710 2260 >	78" dia Left Bank Culvert Material	170.00	LF	CLABB14	0	0	0	8,516	0	8,516	50.09
B MIL AA <02710 2240 >	36" dia Right Bank Culvert Material	100.00	LF	CLABB14	0	0	0	2,831	0	2,831	28.31
B MIL AA <02710 2240 >	36" dia Right Bank Culvert Installation	100.00	LF	CLABB14	69	1,967	150	0	0	2,117	21.17
B MIL AA <02710 2260 >	78" dia Left Bank Culvert Removal	170.00	LF	CLABB14	157	4,458	340	0	0	4,798	28.22
B MIL AA <02710 2240 >	36" dia Right Bank Culvert Removal	100.00	LF	CLABB14	69	1,967	150	0	0	2,117	21.17
B MIL AA <02710 2260 >	78" dia Left Bank Installation	170.00	LF	CLABB14	157	4,458	340	0	0	4,798	28.22
USR AA <01036 0352 >	Monitoring Plan	1.00	LS		172	10,000	0	0	0	10,000	10000.00
L MIL AA <01036 0300 >	Site Inspections	320.00	HR	UFLDSUGE1	850	32,000	0	0	0	32,000	100.00
USR AA <01036 0352 >	Compliance Report	1.00	LS		172	15,000	0	0	0	15,000	15000.00
TOTAL Temporary Construction											
					6,758	255,524	75,410	199,702	40,532	571,167	
03. Demolition											
L MIL AA <02046 2115 >	Demolish Dam Concrete	3580.00	CY	CODLB6	9,947	290,946	42,960	0	0	333,906	93.27
MIL AA <02234 0345 >	Hauling Debris (cyc/hr)	3580.00	CY	COEIB34B	133	3,723	5,227	0	0	8,950	2.50
CIV AA <02091 5010 >	Disposal of Debris charge	3580.00	CY	N/A	0	0	0	0	244,621	244,621	68.33
MIL AA <02234 0345 >	Hauling Debris (cyc/hr)	150.00	CY	COEIB34B	6	156	219	0	0	375	2.50
CIV AA <02091 5010 >	Disposal of Debris charge	150.00	CY	N/A	0	0	0	0	10,250	10,250	68.33
AF AA <02049 8030 >	Building demolitions	48000	CF	COFCB3C	106	2,860	2,880	0	0	5,760	0.12
MIL AA <02046 2115 >	Demolish PSE Intake Concrete	220.00	CY	CODLB6	629	18,385	2,715	0	0	21,100	95.91

3. Portion of PSE Intake		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
MIL AA	<02234 0545 > Hauling Debris	220.00	CY	COEIB34B	8	229	321	0	0	550	2.50
CIV AA	<02091 5010 > Disposal of Debris	220.00	CY	N/A	0	0	0	0	15,033	15,033	68.33
MIL AA	<02046 2115 > Demolish COE Ladder Concrete	131.00	CY	CODLB6	374	10,948	1,616	0	0	12,564	95.91
MIL AA	<02234 0545 > Hauling Debris	131.00	CY	COEIB34B	5	136	191	0	0	328	2.50
CIV AA	<02091 5010 > Disposal of Debris	131.00	CY	N/A	0	0	0	0	8,951	8,951	68.33
MIL AA	<02046 2115 > Demolish Muckleshoot Ladder Concrete	10.00	CY	CODLB6	29	836	123	0	0	959	95.91
MIL AA	<02234 0545 > Hauling Debris	10.00	CY	COEIB34B	0	10	15	0	0	25	2.50
CIV AA	<02091 5010 > Disposal of Debris	10.00	CY	N/A	0	0	0	0	683	683	68.33
TOTAL Demolition											
					11,236	328,249	56,267	0	279,538	664,054	
04. Earthworks		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
L CIV AA	<02232 0160 > Loading & Hauling from onsite borrow material	6800.00	CY	CODEB12D	326	10,862	20,400	0	0	31,262	4.60
MIL AA	<02244 1510 > Crushed Rock Surfacing areas	90.00	CY	COFGB36C	8	267	289	2,378	0	2,934	32.60
L CIV AA	<02232 0160 > Loading & Hauling from onsite borrow material	900.00	CY	CODEB12D	43	1,438	2,700	0	0	4,138	4.60
CIV AA	<02267 0200 > Geotextile Material & Installation	20900	SF	USKCF	84	2,508	209	13,201	0	15,918	0.76
RSM AA	<02270 0100 > 12" Rip Rap Material	270.00	CY	UOEHB12G	70	2,346	1,247	5,531	0	9,124	33.79
AF AA	<02240 0030 > Placement and Shaping of Levee Material	2600.00	CY	CODTB10B	31	1,014	1,170	0	0	2,184	0.84
L MIL AA	<02228 0322 > 4" Rip Rap Ditch 900 LF	90.00	CY	CODEB12A	90	3,000	1,875	0	0	4,875	54.17
M RSM AA	<02270 0100 > 12" Rip Rap Material Placement	120.00	CY	UOEHB12G	31	1,043	554	0	0	1,597	13.31
MIL AA	<02244 1510 > Crushed Rock Surfacing for Levee roadway areas	200.00	CY	COFGB36C	18	594	642	5,284	0	6,520	32.60
MIL AA	<02752 1030 > Type I Catch Basin at end of Levee Ditch deep	1.00	EA	ACARCL14H	48	1,695	30	803	0	2,528	2527.86
MIL AA	<02764 2560 > 12" CMP Drain from Catch Basin	160.00	LF	CLABB14	35	989	75	1,005	0	2,069	12.93
MIL AA	<02232 0140 > Excavate & load, hydr excavator, 2 CY, medium matl	24700	CY	CODEB12C	380	12,844	11,856	0	0	24,700	1.00
M RSM AA	<02270 0100 > 72" Rip-rap Installation	570.00	CY	UOEHB12G	147	4,955	2,632	19,243	0	26,830	47.07
B CIV AA	<02250 2130 > Filter fabric	15300	SF	ULABA2	248	6,579	1,209	9,997	0	17,785	1.16
AF AA	<02244 1530 > Filter Gravel	3700.00	CY	COFGB36C	177	5,734	6,193	71,117	0	83,044	22.44
TOTAL Earthworks											
					1,736	55,869	51,082	128,559	0	235,509	

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
35. Right Bank Fishway Entrance										
MIL AA <02232 0140 >	Excavation	360.00	CY	CODEB12C	6	187	0	0	360	1.00
MIL AA <02234 2200 >	Onsite hauling and stockpile material	360.00	CY	CTDHB34F	4	104	0	0	292	0.81
AF AA <02240 0030 >	Backfill & Compaction from stockpiled material	170.00	CY	CODTB10B	2	66	0	0	143	0.84
CIV AA <02664 2180 >	24" Steel Pipe	370.00	LF	UOEHB21A	315	10,556	20,646	0	32,993	89.17
MIL AA <03170 3060 >	Slab on Grade Formwork	90.00	SF	ACARC1	8	276	0	0	353	3.92
MIL AA <03217 0600 >	Slab on Grade Reinforcing Steel	2.00	TON	SIWRRODM4	28	1,225	0	0	2,370	1185.17
RSM AA <03326 0300 >	Slab on Grade Material	21.00	CY	N/A	0	0	1,570	0	1,570	74.76
MIL AA <03372 4650 >	Slab on Grade Placement	21.00	CY	CLABC20	7	210	0	0	277	13.19
AF AA <03150 7100 >	Elevated Slab Formwork	540.00	SF	ACARC1	54	1,814	0	0	2,085	3.86
MIL AA <03217 0600 >	Elevated Slab Reinforcing Steel	5.40	TON	SIWRRODM4	75	3,309	0	0	6,400	1185.17
RSM AA <03326 0300 >	Elevated Slab Material	18.00	CY	N/A	0	0	1,346	0	1,346	74.76
MIL AA <03372 1500 >	Elevated Slab Placement	18.00	CY	CLABC20	7	208	0	0	275	15.25
MIL AA <03182 4600 >	Walls Formwork	2500.00	SF	ACARC2	400	13,825	4,737	0	18,562	7.42
MIL AA <03217 0750 >	Walls Reinforcing Steel	8.80	TON	SIWRRODM4	70	3,100	0	0	8,138	924.76
RSM AA <03326 0300 >	Walls Material	48.00	CY	N/A	0	0	3,588	0	3,588	74.76
MIL AA <03372 5100 >	Walls Placement	48.00	CY	CLABC20	28	805	0	0	1,065	22.18
MIL AA <05523 0530 >	Handrail	50.00	LF	SIWSE4	10	469	13	0	1,094	21.88
CIV AA <02664 2180 >	24" Dia Steel Pipe	370.00	LF	UOEHB21A	315	10,556	20,646	0	32,993	89.17
CIV AA <02664 8180 >	24" Dia 90 Bend	4.00	EA	UOEHB21A	34	1,143	11,291	0	12,627	3156.81
CIV AA <02664 8440 >	24" Dia 45 Bend	1.00	EA	UOEHB21A	9	286	2,171	0	2,506	2505.59
USR AA <13900 0006 >	24" Dia Flush Gate w/ auto actuator	1.00	EA		0	500	9,518	0	11,018	11017.86
USR AA <13900 0002 >	MCC Breaker Bucket	1.00	EA		0	500	1,960	0	2,710	2710.20
RSM AA <16017 1750 >	1" GRC 4x12 Gauge Wiring	480.00	LF	EELELEEC1	43	1,714	0	0	2,539	5.29
MIL AA <16018 0540 >	1" GRC 6x12 Gauge Wiring	480.00	LF	EELELEEC1	41	1,661	0	0	2,727	5.68
USR AA <11270 0011 >	Galvanized Steel Baffle Walls	80.00	SF		0	960	1,760	0	4,637	57.96
TOTAL Right Bank Fishway Entrance										
1,455 53,475 7,676 91,516 0 152,667										
36. Fixed Crest Weir										
MIL AA <02232 0140 >	Excavation	2000.00	CY	CODEB12C	31	1,040	0	0	2,000	1.00
MIL AA <02234 2200 >	Onsite hauling and stockpile material	2000.00	CY	CTDHB34F	21	580	1,040	0	1,620	0.81
RSM AA <02240 0020 >	Imported Structural Backfill w/dozer	200.00	CY	CODTB15	5	140	180	0	1,409	7.05
AF AA <02240 0030 >	Backfill from stockpiled material	1400.00	CY	CODTB10B	17	546	630	0	1,176	0.84
MIL AA <03182 4600 >	Fixed Crest Cutoff Walls Formwork	7110.00	SF	ACARC2	1,138	39,318	0	13,472	52,791	7.42
MIL AA <03217 0750 >	Fixed Crest Cutoff Walls Reinforcing Steel	79.00	TON	SIWRRODM4	632	27,833	0	45,223	73,056	924.76
RSM AA <03326 0300 >	Fixed Crest Cutoff Walls Material	395.00	CY	N/A	0	0	29,530	0	29,530	74.76
Currency in DOLLARS										

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
L MIL AA <03372 5100 > Fixed Crest Cutoff Walls Placement	395.00	CY		1,580	6,628	8,295	0	0	14,923	37.78
MIL AA <03170 3060 > Slab on Grade Formwork	760.00	SF	ACARC1	69	2,333	0	646	0	2,979	3.92
MIL AA <03217 0600 > Slab on Grade Reinforcing Steel	99.00	TON	SIWRRODM4	1,377	60,660	0	56,672	0	117,332	1185.17
RSM AA <03326 0300 > Slab on Grade Material	992.00	CY	N/A	0	0	0	74,162	0	74,162	74.76
L MIL AA <03372 4650 > Slab on Grade Placement	992.00	CY		2,244	16,646	20,832	0	0	37,478	37.78
AF AA <03150 7100 > Crest Pier Formwork	1800.00	SF	ACARC1	180	6,048	0	902	0	6,950	3.86
MIL AA <03217 0600 > Crest Pier Reinforcing Steel	12.00	TON	SIWRRODM4	167	7,353	0	6,869	0	14,222	1185.17
RSM AA <03326 0300 > Crest Pier Material	40.00	CY	N/A	0	0	0	2,990	0	2,990	74.76
L MIL AA <03372 1500 > Crest Pier Placement	40.00	CY		91	671	840	0	0	1,511	37.78
MIL AA <03182 4600 > Precast Walls Formwork	1700.00	SF	ACARC2	272	9,401	0	3,221	0	12,622	7.42
blt plywood										
MIL AA <03217 0750 > Precast Walls Reinforcing Steel	25.00	TON	SIWRRODM4	200	8,808	0	14,311	0	23,119	924.76
L MIL AA <03372 5100 > Precast Walls Placement	83.00	CY		48	1,393	1,743	0	0	3,136	37.78
RSM AA <03326 0300 > Precast Walls Material	83.00	CY	N/A	0	0	0	6,205	0	6,205	74.76
MIL AA <05523 0530 > Handrail	254.00	LF	SIWSE4	51	2,383	64	3,112	0	5,558	21.88
MIL AA <05511 1500 > Stairs	27.00	SF	SIWSE4	5	253	7	617	0	877	32.50
MIL AA <05150 8230 > Walkway Structural Steel	11.50	TON	SIWSE21	26	1,144	267	15,034	0	16,446	1430.09
45'										
MIL AA <05542 0618 > Walkway Grating	633.00	SF	SIWSE4	48	2,234	57	4,336	0	6,627	10.47
USR AA <13900 0008 > Fixed Panel Guides (Stoplogs)	2400.00	LB		0	1,800	1,320	3,267	0	6,387	2.66
TOTAL Fixed Crest Weir	8,202			197,213	36,234	281,659	0	0	515,107	
37. Rubber Weirs										
MIL AA <02232 0140 > Excavation	2100.00	CY	CODEB12C	32	1,092	1,008	0	0	2,100	1.00
MIL AA <02234 2200 > Onsite hauling and stockpile material	2110.00	CY	CTDHB34F	22	612	1,097	0	0	1,709	0.81
AF AA <02240 0030 > Backfill from stockpiled material	1500.00	CY	CODTB10B	18	585	675	0	0	1,260	0.84
RSM AA <02240 0020 > Structural Backfill w/dozer	200.00	CY	CODTB15	5	140	180	0	0	1,409	7.05
MIL AA <03182 4600 > Cutoff Walls Formwork	7620.00	SF	ACARC2	1,219	42,139	0	14,439	0	56,577	7.42
blt plywood										
MIL AA <03217 0750 > Cutoff Walls Reinforcing Steel	89.00	TON	SIWRRODM4	712	31,356	0	50,947	0	82,304	924.76
RSM AA <03326 0300 > Cutoff Walls Material	445.00	CY	N/A	0	0	0	33,268	0	33,268	74.76
L MIL AA <03372 5100 > Cutoff Walls Placement	445.00	CY		259	7,467	9,345	0	0	16,812	37.78
MIL AA <03170 3060 > Slab on Grade Formwork	816.00	SF	ACARC1	75	2,505	0	693	0	3,198	3.92
MIL AA <03217 0600 > Slab on Grade Reinforcing Steel	112.00	TON	SIWRRODM4	1,558	68,626	0	64,114	0	132,739	1185.17
RSM AA <03326 0300 > Slab on Grade Material	1118.00	CY	N/A	0	0	0	83,582	0	83,582	74.76
L MIL AA <03372 4650 > Slab on Grade Placement	1118.00	CY		387	11,158	23,478	0	0	34,636	30.98
AF AA <03150 7100 > Pier Formwork	4890.00	SF	ACARC1	489	16,430	0	2,450	0	18,880	3.86
MIL AA <03217 0600 > Pier Reinforcing Steel	106.00	TON	SIWRRODM4	1,475	64,949	0	60,679	0	125,628	1185.17
RSM AA <03326 0300 > Pier Material	352.00	CY	N/A	0	0	0	26,315	0	26,315	74.76
L MIL AA <03372 1500 > Pier Placement	352.00	CY		141	4,062	7,392	0	0	11,454	32.54
MIL AA <05523 0530 > Handrail	69.00	LF	SIWSE4	14	647	17	845	0	1,510	21.88
MIL AA <05150 8230 > Walkway Structural Steel	10.00	TON	SIWSE21	23	995	232	13,073	0	14,301	1430.09
45'										
MIL AA <05542 0618 > Walkway Grating	250.00	SF	SIWSE4	19	883	23	1,712	0	2,617	10.47
USR AA <13900 0007 > Stoplog Slot Guides	4000.00	LB		0	3,000	2,200	5,445	0	10,645	2.66

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
USR AA <13900 0008 > Steel Stoplogs	15600	LB		0	11,700	8,580	21,236	0	41,516	2.66
USR AA <13900 0009 > Inflatable Rubber Weirs & Controls	1.00	EA		0	0	0	724,185	0	724,185	724185.00
USR AA <13900 0010 > Rubber Weirs Anchor Embed Installation	1.00	EA		0	6,400	200	436	0	7,036	7035.60
USR AA <13900 0011 > Rubber Weirs Body Installation and Startup	1.00	EA		0	64,000	5,000	545	0	69,545	69544.50
USR AA <13900 0012 > Installation of Air Compressor System	1.00	EA		0	16,000	500	1,634	0	18,134	18133.50
AF AA <15172 4900 > 4" Galvanized Pipe	700.00	LF	MPLUQ1	184	6,916	0	4,978	0	11,894	16.99
AF AA <15197 1440 > 4" Gate Valve	2.00	EA	MPLUQ1	6	241	0	1,098	0	1,339	669.37
RSM AA <16017 1750 > 1" GRC 4x12 Gauge Wiring	400.00	LF	EELBELECI	36	1,428	0	688	0	2,116	5.29
MIL AA <16018 0540 > 3/4" GRC 6x12 Gauge Wiring	150.00	LF	EELBELECI	13	519	0	333	0	852	5.68
USR AA <13900 0002 > MCC Breaker Bucket	3.00	EA		0	1,500	750	5,881	0	8,131	2710.20
TOTAL Rubber Weirs										
	6,685			365,350	60,677	1,119,664	0	1,545,691		
08. 35' Radial Gate										
MIL AA <02232 0140 > Excavation	2800.00	CY	CODEB12C	43	1,456	1,344	0	0	2,800	1.00
MIL AA <02234 2200 > Onsite hauling and stockpile material	2800.00	CY	CTDHB34F	29	812	1,456	0	0	2,268	0.81
AF AA <02240 0030 > Backfill from stockpiled material	80.00	CY	CODTE10B	1	31	36	0	0	67	0.84
RSM AA <02240 0020 > Structural Backfill w/dozer	20.00	CY	CODTE15	0	14	18	109	0	141	7.05
AF AA <03150 7100 > Foundation Transition Formwork	480.00	SF	ACARCL	48	1,613	0	240	0	1,853	3.86
MIL AA <03217 0600 > Foundation Transition Steel	32.00	TON	SIWRRODM4	445	19,607	0	18,318	0	37,926	1185.17
RSM AA <03326 0300 > Foundation Transition Material	325.00	CY	N/A	0	0	24,297	0	24,297	74.76	
L MIL AA <03372 1500 > Foundation Placement	325.00	CY		130	3,751	6,825	0	10,576	32.54	
AF AA <03150 7100 > Right Pier Formwork	2900.00	SF	ACARCL	290	9,744	0	1,453	0	11,197	3.86
MIL AA <03217 0600 > Right Pier Steel	163.00	TON	SIWRRODM4	682	30,024	0	28,050	0	58,074	1185.17
RSM AA <03326 0300 > Right Pier Material	49.00	TON	SIWRRODM4	0	0	12,186	0	12,186	74.76	
L MIL AA <03372 1500 > Right Pier Placement	163.00	CY	N/A	65	1,881	3,423	0	5,304	32.54	
MIL AA <03170 3060 > Slab on Grade Formwork	680.00	SF	ACARCL	62	2,088	0	578	0	2,665	3.92
MIL AA <03217 0600 > Slab on Grade Reinforcing Steel	56.00	TON	SIWRRODM4	779	34,313	0	32,057	0	66,370	1185.17
RSM AA <03326 0300 > Slab on Grade Material	556.00	CY	N/A	0	0	41,566	0	41,566	74.76	
L MIL AA <03372 4650 > Slab on Grade Placement	556.00	CY		192	5,549	11,676	0	17,225	30.98	
MIL AA <03182 4600 > Cutoff Walls Formwork bit plywood	480.00	SF	ACARCL	77	2,654	0	910	0	3,564	7.42
MIL AA <03217 0750 > Cutoff Walls Reinforcing Steel	5.40	TON	SIWRRODM4	43	1,903	0	3,091	0	4,994	924.76
RSM AA <03326 0300 > Cutoff Walls Material	27.00	CY	N/A	0	0	2,019	0	2,019	74.76	
L MIL AA <03372 5100 > Cutoff Walls Placement	27.00	CY		16	453	567	0	1,020	37.78	
AF AA <03150 7100 > Elevated Slab Formwork	960.00	SF	ACARCL	96	3,226	0	481	0	3,707	3.86
MIL AA <03217 0600 > Elevated Slab Reinforcing Steel	7.20	TON	SIWRRODM4	100	4,412	0	4,122	0	8,533	1185.17
RSM AA <03326 0300 > Elevated Slab Material	24.00	CY	N/A	0	0	1,794	0	1,794	74.76	
L MIL AA <03372 1500 > Elevated Slab Placement	24.00	CY		10	277	504	0	781	32.54	
MIL AA <03170 3060 > Upstream Apron Slab Formwork	540.00	SF	ACARCL	49	1,658	0	459	0	2,116	3.92
MIL AA <03217 0600 > Upstream Apron Slab Reinforcing Steel	29.00	TON	SIWRRODM4	403	17,769	0	16,601	0	34,370	1185.17
RSM AA <03326 0300 > Upstream Apron Slab Material	287.00	CY	N/A	0	0	21,456	0	21,456	74.76	

DESCRIPTION	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
MIL AA <03217 0600 > Elevated Slab Reinforcing Steel	4.20	TON	SIWRRODM4	58	2,573	0	2,404	0	4,978	1185.17
RSM AA <03326 0300 > Elevated Slab Material	14.00	CY	N/A	0	0	0	1,047	0	1,047	74.76
L MIL AA <03372 1500 > Elevated Slab Placement	14.00	CY		6	162	294	0	0	456	32.54
MIL AA <03170 3060 > Upstream Apron Slab Formwork	260.00	SF	ACARCL	24	798	0	221	0	1,019	3.92
MIL AA <03217 0600 > Upstream Apron Slab Reinforcing Steel	17.00	TON	SIWRRODM4	237	10,416	0	9,732	0	20,148	1185.17
RSM AA <03326 0300 > Upstream Apron Slab Material	167.00	CY	N/A	0	0	0	12,485	0	12,485	74.76
L MIL AA <03372 4650 > Upstream Apron Slab Placement	167.00	CY		58	1,667	3,507	0	0	5,174	30.98
MIL AA <03182 4600 > Excluder Walls Formwork	630.00	SF	ACARC2	101	3,484	0	1,194	0	4,678	7.42
MIL AA <03217 0750 > Excluder Walls Reinforcing Steel	23.00	TON	SIWRRODM4	184	8,103	0	13,166	0	21,270	924.76
RSM AA <03326 0300 > Excluder Walls Material	114.00	CY	N/A	0	0	0	8,523	0	8,523	74.76
L MIL AA <03372 5100 > Excluder Walls Placement	114.00	CY		66	1,913	2,394	0	0	4,307	37.78
MIL AA <05523 0530 > Handrail	53.00	LF	SIWSE4	11	497	13	649	0	1,160	21.88
USR AA <13900 0007 > Stoplog Slot Guides	3700.00	LB		0	2,775	2,035	5,037	0	9,847	2.66
USR AA <13900 0008 > Steel Stoplogs	8200.00	LB		0	6,150	4,510	11,162	0	21,822	2.66
MIL AA <05511 1500 > Stairs	27.00	SF	SIWSE4	5	253	7	617	0	877	32.50
USR AA <13900 0018 > 16' Radial Gate	1.00	EA		0	0	0	118,701	0	118,701	118701.00
USR AA <13900 0019 > 16' Radial Gate pistons with transmitters and local control	1.00	EA		0	0	0	49,947	0	49,947	49946.99
USR AA <13900 0020 > Gate Installation and Startup	1.00	EA		0	32,000	3,000	1,307	0	36,307	36306.80
RSM AA <16017 1750 > 1" GRC 4x12 Gauge Wiring	220.00	LF	BELELECL	20	785	0	379	0	1,164	5.29
MIL AA <16018 0540 > 3/4" GRC 6x12 Gauge Wiring	40.00	LF	BELELECL	3	138	0	89	0	227	5.68
MIL AA <15162 3014 > Pipe sst sched 40, 1", type 304, threaded, cplg 10' OC, no hangers	60.00	LF	MPLUPLJMI	10	409	0	657	0	1,065	17.75
B MIL AA <05314 6100 > 1/2" Steel Armorary Plate with Studs	3420.00	SF		342	20,520	6,840	72,998	0	100,358	29.34
TOTAL 16' Radial Gate				3,100	171,749	34,202	404,044	0	609,994	
MIL AA <02232 0140 > Excavation	220.00	CY	CODEB12C	3	114	106	0	0	220	1.00
MIL AA <02234 2200 > Onsite hauling and stockpile material	220.00	CY	CTDHB34F	2	64	114	0	0	178	0.81
AF AA <02240 0030 > Backfill from stockpiled material	1300.00	CY	CODTB10B	16	507	585	0	0	1,092	0.84
RSM AA <02240 0020 > Structural Backfill w/dozer	250.00	CY	CODTB15	6	175	225	1,361	0	1,761	7.05
MIL AA <03217 0600 > Lower Slab on Grade Reinforcing Steel	36.00	TON	SIWRRODM4	501	22,058	0	20,608	0	42,666	1185.17
RSM AA <03326 0300 > Lower Slab on Grade Material	361.00	CY	N/A	0	0	0	26,988	0	26,988	74.76
L MIL AA <03372 4650 > Lower Slab on Grade Placement	361.00	CY		125	3,603	7,581	0	0	11,184	30.98
MIL AA <03217 0600 > Upper Slab on Grade Reinforcing Steel	14.00	TON	SIWRRODM4	195	8,578	0	8,014	0	16,592	1185.17
RSM AA <03326 0300 > Upper Slab on Grade Material	141.00	CY	N/A	0	0	0	10,541	0	10,541	74.76
L MIL AA <03372 4650 > Upper Slab on Grade Placement	141.00	CY		49	1,407	2,961	0	0	4,368	30.98

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
MIL AA <03182 4600 > Ladder Walls Formwork	4800.00	SF	ACARC2	768	26,544	0	9,095	0	35,639	7.42
blt plywood										
MIL AA <03217 0750 > Ladder Walls Reinforcing Steel	23.00	TON SIWRRODM4		184	8,103	0	13,166	0	21,270	924.76
RSM AA <03326 0300 > Ladder Walls Material	116.00	CY N/A		0	0	0	8,672	0	8,672	74.76
L MIL AA <03372 5100 > Ladder Walls Placement	116.00	CY		67	1,946	2,436	0	0	4,382	37.78
MIL AA <03182 4600 > Fish Screen Walls Formwork	15800	SF	ACARC2	2,528	87,374	0	29,939	0	117,313	7.42
blt plywood										
MIL AA <03217 0750 > Fish Screen Walls Reinforcing Steel	135.00	TON SIWRRODM4		1,080	47,563	0	77,280	0	124,843	924.76
RSM AA <03326 0300 > Fish Screen Walls Material	675.00	CY N/A		0	0	0	50,463	0	50,463	74.76
L MIL AA <03372 5100 > Fish Screen Walls Placement	675.00	CY		393	11,327	14,175	0	0	25,502	37.78
MIL AA <03182 4600 > Tailwater Retaining Walls Formwork	5600.00	SF	ACARC2	896	30,968	0	10,611	0	41,579	7.42
blt plywood										
MIL AA <03217 0750 > Tailwater Retaining Walls Reinforcing Steel	41.00	TON SIWRRODM4		328	14,445	0	23,470	0	37,915	924.76
RSM AA <03326 0300 > Tailwater Retaining Walls Material	207.00	CY N/A		0	0	0	15,475	0	15,475	74.76
L MIL AA <03372 5100 > Tailwater Retaining Walls Placement	207.00	CY		120	3,473	4,347	0	0	7,820	37.78
MIL AA <05150 8230 > Fish Screen Structural Steel	9.00	TON SIWSE21		21	896	209	11,766	0	12,871	1430.09
45'										
MIL AA <05523 0530 > Handrail	380.00	LF	SIWSE4	76	3,564	95	4,655	0	8,315	21.88
MIL AA <05511 1500 > Stairs	27.00	SF	SIWSE4	5	253	7	617	0	877	32.50
MIL AA <05150 8230 > Fish Screen Structural Steel	9.00	TON SIWSE21		21	896	209	11,766	0	12,871	1430.09
45'										
MIL AA <05542 0618 > Walkway Grating	200.00	SF	SIWSE4	15	706	18	1,370	0	2,094	10.47
MIL AA <05542 0622 > Diffuser Grating	170.00	SF	SIWSE4	9	425	12	1,420	0	1,857	10.92
USR AA <13900 0001 > 36" Dia Flush Gate w/actuator	1.00	EA		0	500	1,000	11,571	0	13,071	13070.63
USR AA <13900 0002 > MCC Breaker Bucket	5.00	EA		0	2,500	1,250	9,801	0	13,551	2710.20
USR AA <13900 0003 > 48" Wide 3 Leave Telescoping Gate	1.00	EA		0	1,000	2,500	37,244	0	40,744	40743.80
USR AA <13900 0004 > 36" x 36" AWS Supply Gate with Motorized Acuator	3.00	EA		0	1,500	3,000	34,712	0	39,212	13070.63
USR AA <13900 0005 > 36" Dia Sch 10 Coated Steel (AWS Pipe)	20.00	LF		0	200	500	1,851	0	2,551	127.57
MIL AA <15172 2160 > 12" Dia Steel Pipe	5.00	LF	MPLUQ2	3	133	0	184	0	317	63.38
USR AA <13900 0024 > 8" Dia Ramp Gate w/handwheel	1.00	EA		0	500	250	3,153	0	3,903	3902.66
USR AA <13900 0022 > 12" Dia Flush Gate w/handwheel	1.00	EA		0	500	250	3,370	0	4,120	4120.46
MIL AA <15172 2140 > 8" dia, Steel Pipe	35.00	LF	MPLUQ2	18	678	0	645	0	1,322	37.77
USR AA <13900 0026 > 24" x 24" Pool Gate with Handwheel	2.00	EA		0	1,000	500	6,490	0	7,990	3995.22
USR AA <15286 4640 > Vertical Turbine Pump 75 Hp	1.00	EA	MPLUQ2	16	620	250	33,759	0	34,629	34628.68
MIL AA <16017 5080 > Conduit, to 15' h, 2.5" dia, incl 2 termn, 2 elb&11 bm clip per 100'	180.00	LF	EELELEFC1	16	643	0	353	0	995	5.53
AF AA <15172 4920 > 6" Steel Sediment Control Piping	240.00	LF	MPLUQ2	113	4,375	0	5,653	0	10,028	41.79
AF AA <15172 4900 > 4" Steel Sediment Pipe	350.00	LF	MPLUQ1	92	3,458	0	2,489	0	5,947	16.99
USR AA <13900 0051 > Sediment Suction	1.00	EA		0	250	500	16,335	0	17,085	17085.00
MIL AA <15174 5916 > 4" x 8" Tube Steel Manifolds	19.00	EA	MPLUQ2	57	2,208	0	3,095	0	5,303	279.08
USR AA <13900 0002 > MCC Breaker Bucket	1.00	EA		0	500	250	1,960	0	2,710	2710.20
RSM AA <16017 1750 > 1" GRC 4x12 Gauge Wiring	510.00	LF	EELELEFC1	45	1,821	0	878	0	2,698	5.29

	QUANTITY	UOM	CREW	ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
MIL AA <16018 0540 > 1" GRC 6x12 Gauge Wiring	260.00	LF	EELELECI		22	900	0	578	0	1,477	5.68
M RSM AA <15194 1110 > 4" Butterfly Valves w/motorized actuators	19.00	EA	MFLUQ2		152	5,887	0	33,106	0	38,993	2052.24
USR AA <13900 0028 > Fish Screen Panels and Backing Support	1.00	EA			0	9,000	2,500	37,026	0	48,526	48526.00
USR AA <13900 0030 > Fish Screen Adjustable Baffles	1.00	EA			0	9,000	2,500	34,848	0	46,348	46348.00
USR AA <13900 0032 > Fish Screen Blank Panels	1.00	EA			0	4,500	1,500	9,801	0	15,801	15801.00
USR AA <13900 0034 > Fish Screen Cleaner	1.00	EA			0	12,000	3,000	87,120	0	102,120	102120.00
USR AA <13900 0036 > Fish Screen Cleaner Local Control Panel	1.00	EA			0	6,000	1,000	27,225	0	34,225	34225.00
MIL AA <16018 0540 > 1" GRC 6x12 Gauge Wiring	220.00	LF	EELELECI		19	761	0	489	0	1,250	5.68
USR AA <13900 0038 > MCC VFD	1.00	EA			0	1,000	250	8,712	0	9,962	9962.00
USR AA <13900 0040 > SS Bypass Ramp Gate w/Hydraulic Actuator	1.00	EA			0	5,000	2,500	76,230	0	83,730	83730.00
USR AA <13900 0042 > Hydraulic Local Control Panel	1.00	EA			0	2,500	250	21,780	0	24,530	24530.00
USR AA <13900 0044 > SS Fish Braile	1.00	EA			0	3,840	1,500	20,473	0	25,813	25813.20
USR AA <13900 0046 > SS V-Traps at Holding and Loading Pools	1.00	EA			0	1,280	1,500	15,682	0	18,462	18461.60
USR AA <13900 0048 > 5 hp Braile Hoist	1.00	EA			0	250	500	2,178	0	2,928	2928.00
USR AA <13900 0050 > 10 hp Braile Hoist	1.00	EA			0	250	500	3,267	0	4,017	4017.00
USR AA <13900 0051 > Sediment Suction	1.00	EA			0	250	500	16,335	0	17,085	17085.00
USR AA <13900 0002 > MCC Breaker Bucket	2.00	EA			0	2,000	1,000	7,841	0	10,841	5420.40
TOTAL Fish Screen & Fish Trap Improvem											
					7,961	361,793	62,330	913,512	0	1,337,634	

	QUANTITY	UOM	CREW	ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
11. Diversion Intake											
MIL AA <02232 0140 > Excavation	2220.00	CY	CODEB12C		34	1,154	1,066	0	0	2,220	1.00
MIL AA <02234 2200 > Onsite hauling and stockpile material	2200.00	CY	CTDHB34F		23	638	1,144	0	0	1,782	0.81
AF AA <02240 0030 > Backfill from stockpiled material	1000.00	CY	CODTB10B		12	390	450	0	0	840	0.84
RSM AA <02240 0020 > Structural Backfill w/dozer	200.00	CY	CODTB15		5	140	180	1,089	0	1,409	7.05
MIL AA <03217 0600 > Temp Div Slab on Grade Reinforcing Steel	22.00	TON	SIWRRODM4		306	13,480	0	12,594	0	26,074	1185.17
RSM AA <03326 0300 > Temp Div Slab on Grade Material	220.00	CY	N/A		0	0	0	16,447	0	16,447	74.76
L MIL AA <03372 4650 > Temp Div Slab on Grade Placement	220.00	CY			76	2,196	4,620	0	0	6,816	30.98
MIL AA <03182 4600 > Temp Div Walls Formwork blt plywood	10560	SF	ACARC2		1,690	58,397	0	20,010	0	78,407	7.42
MIL AA <03217 0750 > Temp Div Walls Reinforcing Steel	20.00	TON	SIWRRODM4		160	7,046	0	11,449	0	18,495	924.76
RSM AA <03326 0300 > Temp Div Walls Material	98.00	CY	N/A		0	0	0	7,326	0	7,326	74.76
L MIL AA <03372 5100 > Temp Div Walls Placement	98.00	CY			57	1,644	2,058	0	0	3,702	37.78
AF AA <03150 7100 > Temp Div Stoplogs Formwork	200.00	SF	ACARCI		20	672	0	100	0	772	3.86
MIL AA <03217 0600 > Temp Div Stoplogs Reinforcing Steel	1.20	TON	SIWRRODM4		17	735	0	687	0	1,422	1185.17
RSM AA <03326 0300 > Temp Div Stoplogs Material	6.00	CY	N/A		0	0	0	449	0	449	74.76
L MIL AA <03372 1500 > Temp Div Stoplogs Placement	6.00	CY			2	69	126	0	0	195	32.54
MIL AA <03170 3060 > Intake Slab Formwork	264.00	SF	ACARCI		24	810	0	224	0	1,035	3.92
MIL AA <03217 0600 > Intake Slab Reinforcing Steel	40.00	TON	SIWRRODM4		557	24,509	0	22,898	0	47,407	1185.17
RSM AA <03326 0300 > Intake Slab Material	198.00	CY	N/A		0	0	0	14,802	0	14,802	74.76

Tri-Service Automated Cost Engineering System (TRACES)
 PROJECT MM1LPB: White River Barrier - Locally Preferred Alternative
 White River Diversion Dam
 11. Diversion Intake

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
L MIL AA <03372 4650 > Intake Slab Placement	198.00	CY	ACARC2	68	1,976	4,158	0	0	6,134	30.98
MIL AA <03182 4600 > Sill Suspended Slab Formwork	210.00	SF	ACARC2	34	1,161	0	398	0	1,559	7.42
b1t plywood										
MIL AA <03217 0750 > Sill Suspended Reinforcing Steel	2.00	TON	SIWRRODM4	16	705	0	1,145	0	1,850	924.76
RSM AA <03326 0300 > Sill Suspended Material	6.00	CY	N/A	0	0	0	449	0	449	74.76
L MIL AA <03372 5100 > Sill Suspended Placement	6.00	CY		3	101	126	0	0	227	37.78
MIL AA <03182 4600 > Intake Walls Formwork	8400.00	SF	ACARC2	1,344	46,452	0	15,917	0	62,369	7.42
b1t plywood										
MIL AA <03217 0750 > Intake Walls Reinforcing Steel	54.00	TON	SIWRRODM4	432	19,025	0	30,912	0	49,937	924.76
RSM AA <03326 0300 > Intake Walls Material	268.00	CY	N/A	0	0	0	20,036	0	20,036	74.76
L MIL AA <03372 5100 > Intake Walls Placement	268.00	CY		156	4,497	5,628	0	0	10,125	37.78
MIL AA <03217 0600 > Suspended Slab on Grade Reinforcing Steel	32.00	TON	SIWRRODM4	445	19,607	0	18,318	0	37,926	1185.17
RSM AA <03326 0300 > Suspended Slab on Grade Material	107.00	CY	N/A	0	0	0	7,999	0	7,999	74.76
L MIL AA <03372 4650 > Suspended Slab on Grade Placement	107.00	CY		37	1,068	2,247	0	0	3,315	30.98
MIL AA <03182 4600 > Intake Curving Walls Formwork	9700.00	SF	ACARC2	1,552	53,641	0	18,380	0	72,021	7.42
b1t plywood										
MIL AA <03217 0750 > Intake Curving Walls Reinforcing Steel	100.00	TON	SIWRRODM4	800	35,232	0	57,244	0	92,476	924.76
RSM AA <03326 0300 > Intake Curving Walls Material	498.00	CY	N/A	0	0	0	37,230	0	37,230	74.76
L MIL AA <03372 5100 > Intake Curving Walls Placement	498.00	CY		230	8,356	10,458	0	0	18,814	37.78
AF AA <03150 7100 > Pier Formwork	450.00	SF	ACARC1	45	1,512	0	225	0	1,737	3.86
MIL AA <03217 0600 > Pier Reinforcing Steel	6.00	TON	SIWRRODM4	83	3,676	0	3,435	0	7,111	1185.17
RSM AA <03326 0300 > Pier Material	28.00	CY	N/A	0	0	0	2,093	0	2,093	74.76
L MIL AA <03372 1500 > Pier Placement	28.00	CY		11	323	588	0	0	911	32.54
MIL AA <03217 0600 > Repaving Slab Reinforcing Steel	8.00	TON	SIWRRODM4	111	4,902	0	4,580	0	9,481	1185.17
RSM AA <03326 0300 > Repaving Slab Material	83.00	CY	N/A	0	0	0	6,205	0	6,205	74.76
MIL AA <03372 4650 > Repaving Placement	83.00	CY	CLABC20	29	828	266	0	0	1,095	13.19
USR AA <13900 0007 > Stoplog slot Guides - Intake	5800.00	LB		0	4,350	3,190	7,895	0	15,435	2.66
USR AA <13900 0008 > Steel Stoplogs - Intake	23040	LB		0	17,280	12,672	31,363	0	61,315	2.66
USR AA <13900 0007 > Stoplog slot Guides - Flume	2400.00	LB		0	1,800	1,320	3,267	0	6,387	2.66
USR AA <13900 0008 > Steel Stoplogs - Flume	9000.00	LB		0	6,750	4,950	12,251	0	23,951	2.66
MIL AA <05523 0530 > Handrail	112.00	LF	SIWSE4	22	1,051	28	1,372	0	2,451	21.88
MIL AA <05150 8230 > Grating Support Steel	1.00	TON	SIWSE21	2	100	23	1,307	0	1,430	1430.09
USR AA <13900 0007 > Stoplog slot Grating	2500.00	LB		0	1,875	1,375	3,403	0	6,653	2.66
MIL AA <05314 6100 > 1/2" Steel Armorary Plate with Studs	7000.00	SF	SIWSE4	56	2,660	70	3,735	0	6,465	0.92
USR AA <13900 0018 > Head Gate Steel Refurbishing	5000.00	LB		0	1,200	2,250	5,445	0	8,895	1.78
USR AA <13900 0019 > Head Gate Pistons and Hydraulic	1.00	EA		0	2,400	0	49,947	0	52,347	52346.99
MIL AA <05150 8220 > Pier Nosing	26.00	TON	SIWSE21	185	8,050	1,879	34,685	0	44,614	1715.94
B MIL AA <05314 6100 > 1/2" Steel Armorary Plate with Studs	7000.00	SF		700	42,000	14,000	149,411	0	205,411	29.34
TOTAL Diversion Intake										
	9,405			404,461	74,873	636,723		0	1,116,057	

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
12. Incidentals										
MIL AA <02833 4760 > Fence gates	6.00	EA	CLABB80B	32	918	393	2,761	0	4,072	678.66
wir										
MIL AA <02833 4630 > Fence, 7' high	800.00	LF	USKCSKWK3	40	1,504	0	24,820	0	26,324	32.91
MIL AA <02932 0320 > Hydroseeding	2.00	ACR	COELB66	9	286	135	1,197	0	1,618	809.17
TOTAL Incidentals				81	2,709	528	28,778	0	32,015	
13. Buildings										
MIL AA <03170 3060 > Slab on Grade Formwork	210.00	SF	ACARCL	19	645	0	178	0	823	3.92
MIL AA <03217 0600 > Slab on Grade Reinforcing Steel	5.00	TON	SIWRRODM4	70	3,064	0	2,862	0	5,926	1185.17
RSM AA <03326 0300 > Slab on Grade Material	50.00	CY	N/A	0	0	0	3,738	0	3,738	74.76
MIL AA <03372 4650 > Slab on Grade Placement	50.00	CY	CLABC20	17	499	161	0	0	660	13.19
MIL AA <04235 6100 > CMU Block Wall	1800.00	SF	AMABD8	206	6,894	0	4,293	0	11,187	6.21
scaf/reinf										
B MIL AA <05155 3100 > Roof Truss (20' Span)	29.00	EA		1,160	1,740	1,740	3,158	0	6,638	228.90
MIL AA <09263 2000 > Gypsum Board Ceiling	1000.00	SF	ACARCARP2	8	290	0	316	0	606	0.61
MIL AA <07417 0970 > Metal Roofing	1400.00	SF	ALABG3	50	1,680	0	1,936	0	3,616	2.58
fasteners incl										
B MIL AA <08109 0640 > 3 x 7 Hollow Metal Door	5.00	EA	ACARCARP2	30	1,075	0	6,534	0	7,609	1521.76
B MIL AA <08361 2700 > 8 x 10 Roll-up Door	1.00	EA	ACARCARP2	16	573	0	2,614	0	3,187	3186.88
sectional										
B MIL AA <10824 0100 > Bathroom accessories	1.00	EA	ACARCARP1	70	2,500	0	5,445	0	7,945	7945.00
MIL AA <08624 0410 > Windows	2.00	EA	ACARCARP1	2	64	0	595	0	658	329.15
w/fr/scr/ext trim										
MIL AA <11601 6250 > Tables and Chairs	10.00	LF	N/A	0	0	0	3,082	0	3,082	308.17
MIL AA <15708 2344 > HVAC System	1.00	EA	MSPFQ6	34	1,346	0	9,402	0	10,748	10747.66
B MIL AA <11226 0100 > Sewage Grinder Station	1.00	EA	MPLUQ2	60	2,324	0	15,246	0	17,570	17569.81
B MIL AA <16711 0300 > General Electrical Installation	1.00	EA	EELER19	62	2,500	0	5,445	0	7,945	7945.00
MIL AA <10505 0500 > Lockers	4.00	EA	MSHMSHEE1	4	163	0	913	0	1,076	269.05
TOTAL Buildings				1,807	25,356	1,901	65,757	0	93,013	
14. Specialized Equipment										
USR AA <16515 0012 > Electrical Service & MMC Service	1.00	LS		0	5,000	1,000	18,513	0	24,513	24513.00
Entrance										
USR AA <16515 0014 > General Motor Control Center	1.00	LS		0	4,000	0	11,979	1,600	17,579	17579.00
USR AA <16515 0016 > Grounding System	1.00	LS		0	1,600	0	1,634	300	3,534	3533.50
USR AA <16515 0018 > Generator Receptacle	1.00	LS		0	1,600	0	1,960	300	3,860	3860.20
USR AA <16515 0020 > Portable Welder Receptacle	1.00	LS		0	1,600	0	1,960	300	3,860	3860.20
USR AA <16515 0022 > Portable Sump Pump and Receptacle	1.00	LS		0	1,600	0	3,812	300	5,712	5711.50
USR AA <11264 0016 > 60-hp Hydraulic Power System	1.00	LS		0	5,000	2,500	59,895	0	67,395	67395.00
USR AA <11264 0018 > Debris Handler	1.00	LS		0	5,000	3,500	239,580	0	248,080	248080.00
USR AA <16264 0020 > Scada Control Panel	1.00	LS		120	7,200	0	98,010	0	105,210	105210.00
USR AA <16227 0022 > HMI Computer and Software	1.00	EA		0	0	0	19,602	0	19,602	19602.00
USR AA <16264 0022 > Scada Programming Software	1.00	EA		0	80,000	0	0	0	80,000	80000.00
USR AA <16264 0024 > Communications Panel	1.00	LS		0	0	0	32,670	0	32,670	32670.00
USR AA <11264 0026 > Level Transmitters Equipment	6.00	EA		0	0	0	15,682	0	15,682	2613.60

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
USR AA <11264 0026 > Level Transmitters Install	6.00	EA		0	3,600	1,500	0	0	5,100	850.00
USR AA <13900 0052 > Hydraulic Controls and Master Panel	1.00	EA		0	8,000	1,500	87,120	0	96,620	96620.00

TOTAL Specialized Equipment	120			120	124,200	10,000	592,416	2,800	729,416	

15. Maintenance Deck										
L MIL AA <03138 4000 > Forms in place, vert, 36" high, plywood, 1 use, beam sides only	250.00	SF	ACARC2	50	1,674	0	958	0	2,632	10.53
L MIL AA <03330 3670 > Concrete in place,pump,750psi, incl flexural on grade	54.00	CY	ULABC8	76	2,191	722	3,548	0	6,461	119.64
L MIL AA <03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	0.50	CSF	ALABCLAB2	1	26	0	3	0	29	58.64
L MIL AA <03217 0700 > Reinforcing in place, walls, #3 to #7	6.00	TON	SIWRRODM4	80	3,295	0	3,352	0	6,647	1107.90
L MIL AA <03182 2008 > Forms in place, walls, int, to 8' high, 1 use, job built plywood	500.00	SF	ACARC2	100	3,348	0	1,035	0	4,382	8.76
CIV AA <02384 4600 > Caisson, open, for mobilization, 50 mile radius, rig to 36"	2.00	EA	CLADB43	48	1,338	211	0	0	1,549	774.62
MIL AA <02384 0300 > Caisson, 30"dia, 0.182 CY/LF, to 50'D, no casings/gndwtr, open, mach dr. 35 foot drilled cast-in-place reinforced concrete piles. 8 each.	280.00	VLF	CLADB43	90	2,498	394	4,309	0	7,200	25.72
L MIL AA <03330 3670 > Concrete in place,pump,750psi, incl flexural on grade	92.00	CY	ULABC8	129	3,733	1,230	6,044	0	11,007	119.64
L MIL AA <03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	1.00	CSF	ALABCLAB2	2	52	0	6	0	59	58.64
L MIL AA <03217 0700 > Reinforcing in place, walls, #3 to #7	9.00	TON	SIWRRODM4	120	4,943	0	5,028	0	9,971	1107.90
L MIL AA <03330 3670 > Concrete in place,pump,750psi, incl flexural on grade	180.00	CY	ULABC8	252	7,303	2,407	11,826	0	21,536	119.64
L MIL AA <03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	5.80	CSF	ALABCLAB2	12	304	0	36	0	340	58.64
L MIL AA <03182 2008 > Forms in place, walls, int, to 8' high, 1 use, job built plywood	5800.00	SF	ACARC2	1,160	38,836	0	12,001	0	50,836	8.76
L MIL AA <03217 0700 > Reinforcing in place, walls, #3 to #7	18.00	TON	SIWRRODM4	240	9,886	0	10,056	0	19,942	1107.90

D. Bridge Girders

	QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
L MIL AA <03330 3670 > Concrete Girders from Tacoma, Concrete Tech	2600.00	LF	ULABC8	2,427	70,325	23,178	170,818	0	264,322	101.66
L MIL AA <03330 3670 > Crane for Girder Placement	40.00	EA	CPIDB19	640	23,085	12,253	2,628	0	37,966	949.16
L MIL AA <03330 3670 > Concrete in place,pump,750psi, incl flexural on grade	50.00	CY	ULABC8	70	2,029	669	3,285	0	5,982	119.64
L MIL AA <03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	0.80	CSF	ALABCLAB2	2	42	0	5	0	47	58.64
L MIL AA <03182 2008 > Forms in place, walls, int, to 8' high, 1 use, job built plywood	500.00	SF	ACARC2	100	3,348	0	1,035	0	4,382	8.76
L MIL AA <03217 0700 > Reinforcing in place, walls, #3 to #7	5.00	TON	SIWRRODM4	67	2,746	0	2,793	0	5,540	1107.90
L MIL AA <03227 0400 > Welded wire fabric, 6 x 6 - W4 x W4 (4 x 4) 58 lb/CSF, sheets	11700	SF	SIWRRODM2	78	3,213	0	2,803	0	6,016	0.51
L MIL AA <03330 3670 > Concrete in place,pump,750psi, incl flexural on grade	217.00	CY	ULABC8	304	8,804	2,902	14,257	0	25,963	119.64
L CIV AA <03150 1000 > Forms in place, elev slab, flat plate plywd to 15' high, 1 use	11700	SF	ACARC2	1,755	58,756	0	33,255	0	92,011	7.86
L MIL AA <03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	117.00	CSF	ALABCLAB2	234	6,138	0	722	0	6,861	58.64
L MIL AA <02835 7272 > Fence, CL, 6' high, dbl, 18'W, incl, gates, swing, galv, w/o barb wire	2.00	EA	CLABB80B	8	223	98	730	0	1,051	525.49
L CIV AA <02840 2000 > Guide/guard rail, 2' wide, 3'-6" H, sgl, cast in pl conc, median barrier	1300.00	LF	COFGB29	228	6,416	1,060	40,602	0	48,078	36.98
L MIL AA <03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	9.10	CSF	ALABCLAB2	18	477	0	56	0	534	58.64
L MIL AA <03217 0700 > Reinforcing in place, walls, #3 to #7	9.00	TON	SIWRRODM4	120	4,943	0	5,028	0	9,971	1107.90
MIL AA <02243 0010 > Base, prepare & roll sub-base, small areas to 2500 SY	180.00	SY	COFGB32A	3	91	69	0	0	160	0.89
M AF AA <02234 0555 > Hauling, hwy haulers, 12 CY, 12 mile round trip @ base wide rate	90.00	CY	COBIB34B	5	119	177	1,470	0	1,766	19.62
MIL AA <02215 2360 > Backfill, spread dumped gravel/fill, dozer, 6" layers, no compaction	540.00	SY	CODTB10B	2	57	67	0	0	124	0.23
MIL AA <02244 0100 > Base course, compacted to 6" deep, crushed 3/4" stone, large areas	180.00	SY	COFGB36C	1	45	50	790	0	885	4.92
CIV AA <02840 2000 > Guide/guard rail, 2' wide, 3'-6" H, sgl, precast conc, median barrier	80.00	LF	COFGB29	12	333	55	2,499	0	2,886	36.08
L MIL AA <03217 0700 > Reinforcing in place, walls, #3 to #7	7.00	TON	SIWRRODM4	93	3,845	0	3,911	0	7,755	1107.90

H. Turnaround Improvement		QUANTITY	UOM	CREW ID	MANHRS	LABOR	EQUIP	MATL	OTHER	TOTAL COST	UNIT COST
L MIL AA	<03182 2008 > Forms in place, walls, int, to 8' high, 1 use, job built plywood	1100.00	SF	ACARC2	220	7,365	0	2,276	0	9,641	8.76
AF AA	<02109 0365 > Clear & grub, grub & stack, 200 HP dozer	300.00	CY	CODTB10B	6	175	206	0	0	381	1.27
MIL AA	<06178 0010 > Framing, heavy, mill timber, beams, single 6" x 10"	8000.00	BF	ACARCARP2	116	4,041	0	15,856	0	19,897	2.49
MIL AA	<02216 5510 > Backfill, strl, 6" lifts, by machine, no compaction, around foundation	100.00	CY	CODEB12A	2	54	34	0	0	88	0.88
MIL AA	<02239 0200 > Spread & compact, slope up to 1 in 4, shape embankment, w/ machine	336.00	SY	COFGB32A	7	212	161	0	0	373	1.11
MIL AA	<02244 0100 > Base course, compacted to 6" deep, crushed 3/4" stone, large areas	336.00	SY	COFGB36C	3	84	94	1,475	0	1,653	4.92
AF AA	<02109 0365 > Clear & grub, grub & stack, 200 HP dozer	217.00	CY	CODTB10B	4	127	149	0	0	275	1.27
RSM AA	<02220 5000 > Compaction, riding, vibrating roller, 6" lifts, 2 passes	100.00	CY	COFCB10Y	0	13	6	0	0	19	0.19
L MIL AA	<03330 3610 > Concrete in place, dir chute, 4.5 MPa, incl flexural on grade	71.00	CY	ULABC8A	85	2,394	0	4,597	0	6,992	98.47
MIL AA	<03132 2050 > Expansion joint, premoided, bituminous fiber, 1" x 12"	55.00	LF	ACARCARP1	1	51	0	95	0	146	2.65
L MIL AA	<03334 0100 > Curing, burlap, 4 uses assumed, 12 oz	1.10	CSF	ALABCLAB2	2	58	0	7	0	65	58.64
TOTAL Maintenance Deck		1.00	JOB		8,970	289,035	46,193	369,193	0	704,421	704421.41
TOTAL White River Barrier					72,977	2,948,472	586,652	5,562,799	322,870	9,420,793	

APPENDIX B – ENVIRONMENTAL
(not included)